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Misia, the woman who captivated
a generation of Parisian artists (p. 94),
as portrayed by Toulouse-Lautrec

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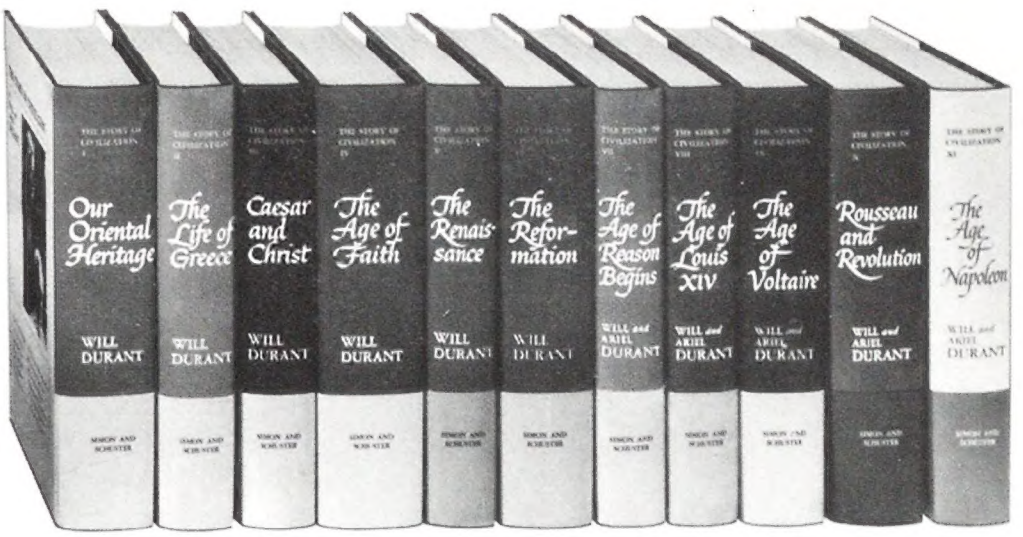

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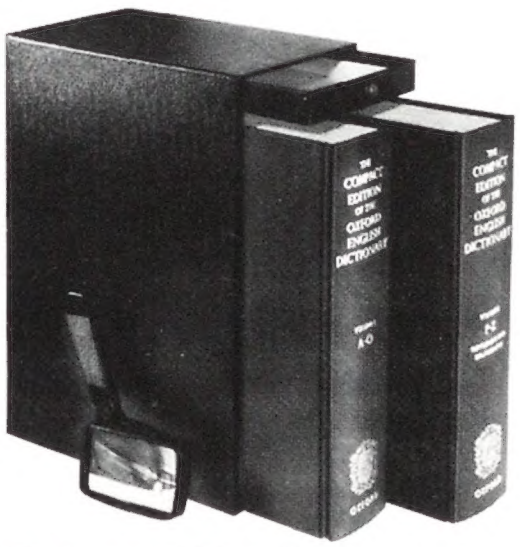

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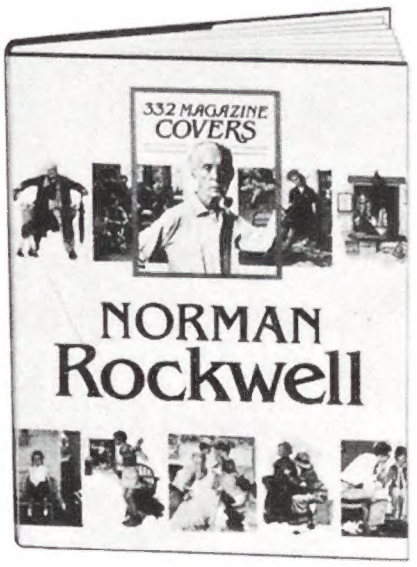

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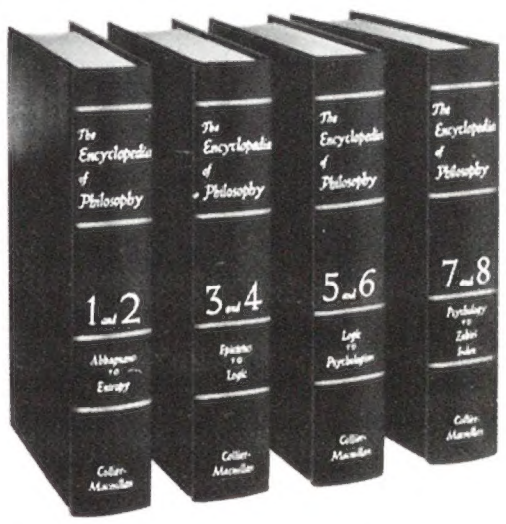

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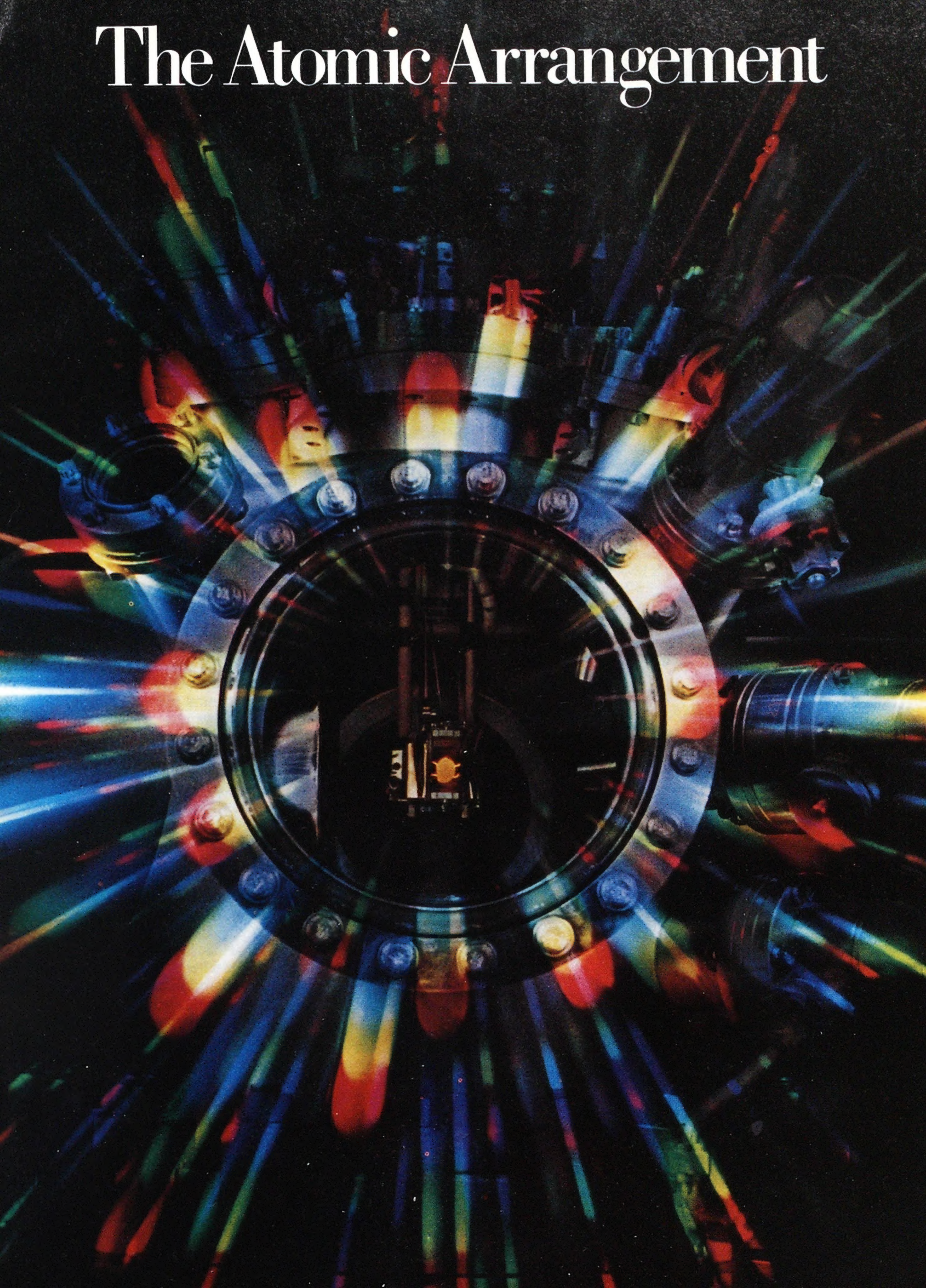
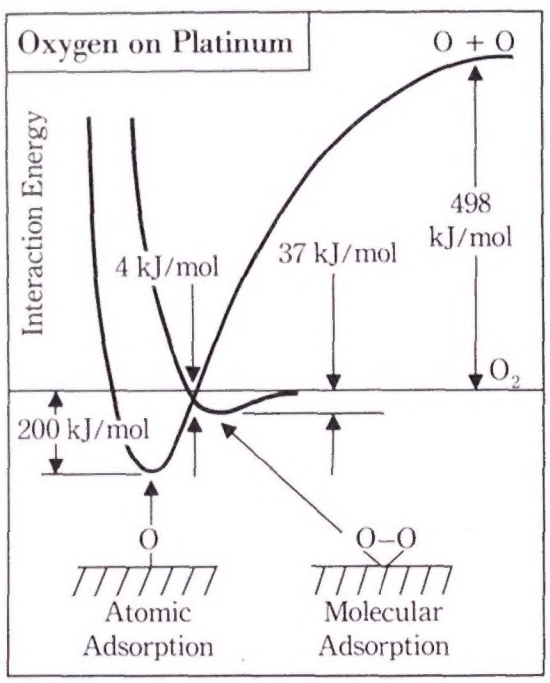


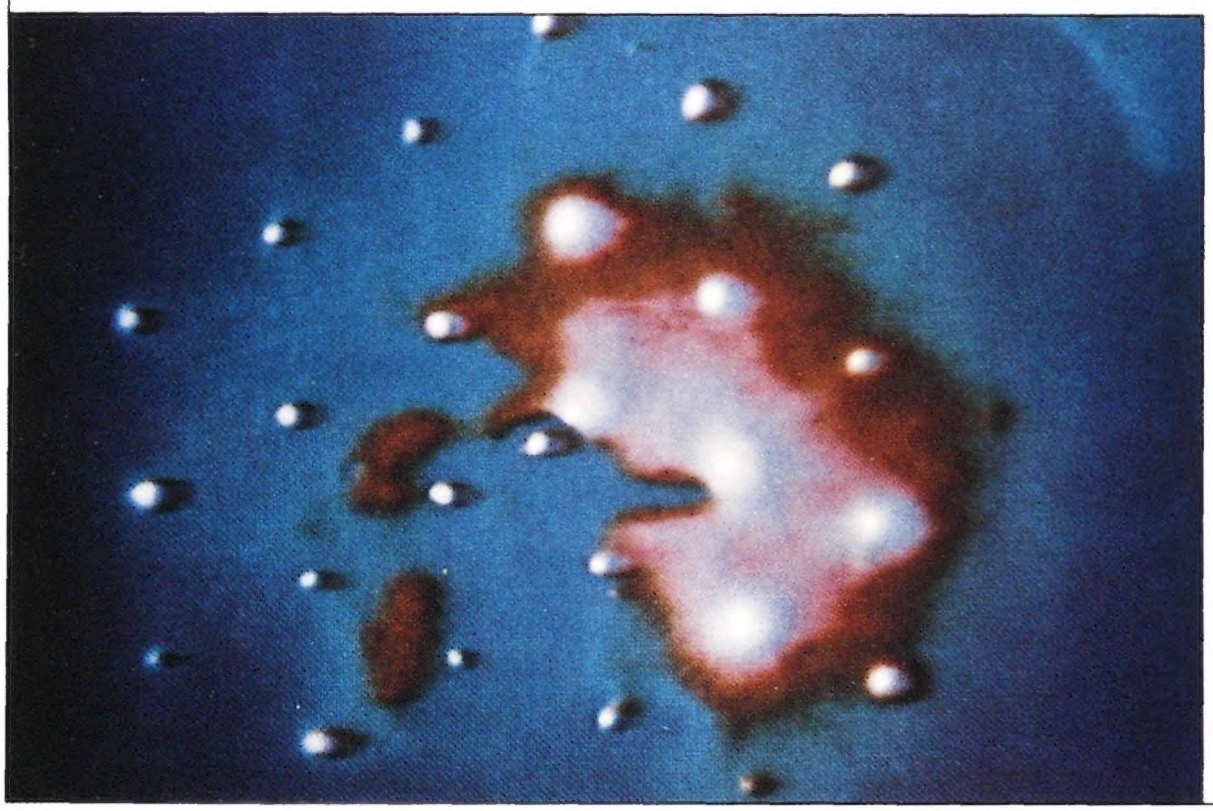
The Atomic Arrangement

In a recent experiment, scientists at the General Motors Research Laboratories studied changes in chemical bonding during the dissociation of oxygen molecules on platinum. Preliminary surface work has explored an interesting new phenomenon: the mechanism of oxygen dissociation over a wide range of temperatures.



A simplified schematic illustrating the reaction potential energy surface for oxygen-adsorption on a close-packed platinum surface.

An electron diffraction pattern which shows diffraction patterns from an oxygen-covered hexagonally close-packed platinum surface at 0° C.



UNDER what conditions will oxygen molecules dissociate into single atoms on a platinum surface? What is the mechanism for oxygen dissociation? Those are the kinds of questions that Dr. John Gland and his colleagues at the General Motors Research Laboratories are investigating to get a better understanding of the chemistry behind catalysis.

Their work has valuable practical implications for the automotive field, where catalysis is used to remove harmful emissions from automobile exhaust. Most cars built in the U.S. use catalytic converters filled with beads containing platinum to chemically transform carbon monoxide and unburned hydrocarbons into harmless CO_2 and water.

While it has long been known that catalysts are an effective way to convert these gases, little is known about precisely why and in what order the basic atomic reactions occur.

In seeking answers to these questions, surface chemists study the elemental composition and geometric arrangement of atoms in the first few atomic layers of the surface and the means by which atoms and molecules from the gas phase bond to the surface.

In his most recent work, Dr. Gland has been studying the adsorption and desorption of oxygen on platinum single-crystal surfaces. This is important because oxygen is the agent that must be adsorbed on the surface to react with carbon monoxide and hydrocarbons to convert them to CO_2.

The experiments were conducted in a stainless steel ultrahigh vacuum system equipped with an electron energy analyzer and a mass spectrometer. The electron energy analyzer allows one to measure the concentration and character of the oxygen adsorbed on the platinum surface. The mass spectrometer is used to measure the desorption of O_2 as the platinum surface is heated. Mathematical analysis of the desorption process allows one to characterize the chemical bond between the oxygen and the platinum surface.

In these experiments, the platinum surface is covered with oxygen at the extremely low temperature of −179°C (almost the temperature of liquid nitrogen) by exposing it to gaseous O_2 molecules. The oxygen remaining in the gas phase is pumped away, and then the desorp-

tion of oxygen from the surface is observed as the platinum crystal is gradually heated to 1000°C.

The oxygen was found to desorb from the surface in two distinctly different temperature regimes—part at −125°C and the rest at about 425°C. By using the oxygen-18 isotope, it was established that the low temperature desorption represents oxygen that was adsorbed on the surface in a molecular form while the higher temperature desorption corresponds to oxygen adsorbed in the atomic form. From an analysis of the desorption process, it was possible to establish the complete energetics. Oxygen molecules from the gas phase strike the surface and are weakly bound (37 kJ/mol). The adsorbed oxygen molecule can either desorb into the gas phase (37 kJ/mol) or dissociate into atoms (33 kJ/mol). The atoms are bonded very strongly (200 kJ/mol) to the surface.

FROM the desorption analysis, it was also possible to deduce the mechanism for the dissociation process. The interesting conclusion that results is that the formation of O atoms on platinum is a two-step process—oxygen is adsorbed in a molecular state and then dissociates to form atoms.

The GM scientists were most interested in learning how this adsorbed molecular species is bonded to the platinum surface. Fortunately, another technique was available to determine the bonding. The technique is called electron energy-loss spectroscopy and is quite new—there are only six or seven such instruments in the world. The measurements not only confirmed the existence of the adsorbed molecular oxygen but showed that it was bound by the transfer of two electrons from the platinum surface into the antibonding π_g orbitals of oxygen. "This was most exciting" said Dr. Gland, "because this is the first time that this type of oxygen bond has been observed on a metal surface.

"We're getting closer and closer to a more specific understanding of catalysis," says Dr. Gland. "The more we learn about simple chemical systems, the better we'll be able to control more complicated systems. That has excellent implications for protecting the environment."

THE MAN BEHIND THE WORK

Dr. John Gland, 32 years old, is a Senior Research Scientist in surface chemistry at the General Motors Research Laboratories. He heads a group of 7 investigators, 4 with Ph.D.s, all involved in work relating to the basic surface chemistry of catalysis.

A graduate of Whittenberg University in Ohio, Dr. Gland received his Ph.D. in physical chemistry at the University of California, Berkeley, in 1973 and joined the General Motors staff that year.

Dr. Gland comments: "I came to GM Labs because I wanted to get in on the ground floor of an exciting new field. The atmosphere here is very open, with lots of cross-pollination among departments. With several hundred people with Ph.D.s here, we've got a lot of human resources to draw on in all the basic sciences.

"Typically, management defines a broad problem, then we're free to tackle the solution in any way we choose. They give us the freedom, equipment and support to get the job done correctly."

In addition to his research, Dr. Gland enjoys backpacking in Wyoming and in the Sierra Nevada Mountains in California.

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Secretary Ripley's comments

The view from the castle

By helping the poorer countries to become solvent, we might slow down the rate of extinction for plant and animal species

I have just been reading a new book, *The Sinking Ark,* by a young ecologist named Norman Myers. Lest this be thought to be a book review or an advertisement, I should say that as a biologist concerned with conservation I feel compelled to pay attention to some of the ideas Myers brings up.

I suspect that Myers is right in calling the problem of disappearing species one of the great "sleeper issues" of our time. "During the past few years," Myers writes, ". . . it is likely that several thousand species [of plants and animals] have disappeared, unheard of and unregretted by the world's citizens and their leaders." He points out that we may be losing one species per day now and, long before the year 2000, the rate could rise to one per hour. The nub of the problem is that species cannot be reconstituted. Mankind did not create them. Once lost, part of the world's reservoir of genetic resources is gone for good.

The problem is particularly acute in the tropics, where the largest number of species of plants and animals occur. And the tropics are, by and large, the home of poorer, developing nations that face overwhelming economic problems and rapidly increasing population. It appears now that it is merely a matter of time until thousands of species of plants and animals will have been pushed out.

Most of the richer nations of the world are located in the temperate regions; thus the crisis of extinction is occurring in areas unseen by those whose standard of living affords them a chance to take esthetics and the long-term future into account. Leaders of the developing nations of the tropics tend to feel that the concept of conservation being urged upon them is an artifact of neo-imperialism, one more example of cultural and economic domination—or at least a sentimental luxury that they cannot afford.

Myers, who is an economist as well as an ecologist specializing in environment and development, suggests an answer—a kind of new international economic order. If the development process could be speeded up, then the chance of preserving endangered species in nature would be much greater. As Myers sees it, the key is rapid urbanization and the acquisition of skills leading to manufacturing, export and a favorable balance of trade—thereby raising the standard of living and reducing the birthrate.

In order to do this, Myers says, the developed countries would have to undertake retraining programs to make their own industrial production mesh with that of the developing nations, so that tariff barriers—a check on the ability of poor countries to help themselves—could be relaxed. According to Myers, the loss of employment in the industrialized nations resulting from relaxation of trade protectionism would be offset by a gain of employment in industries that are export intensive, and that could export much if the poorer countries were developing more rapidly.

Myers proposes that only by making poor countries solvent through the development of industry for export, and the accumulation of enough wealth to raise living standards, can the problem of species extinction be solved.

To me, as a biologist, his arguments make good sense.

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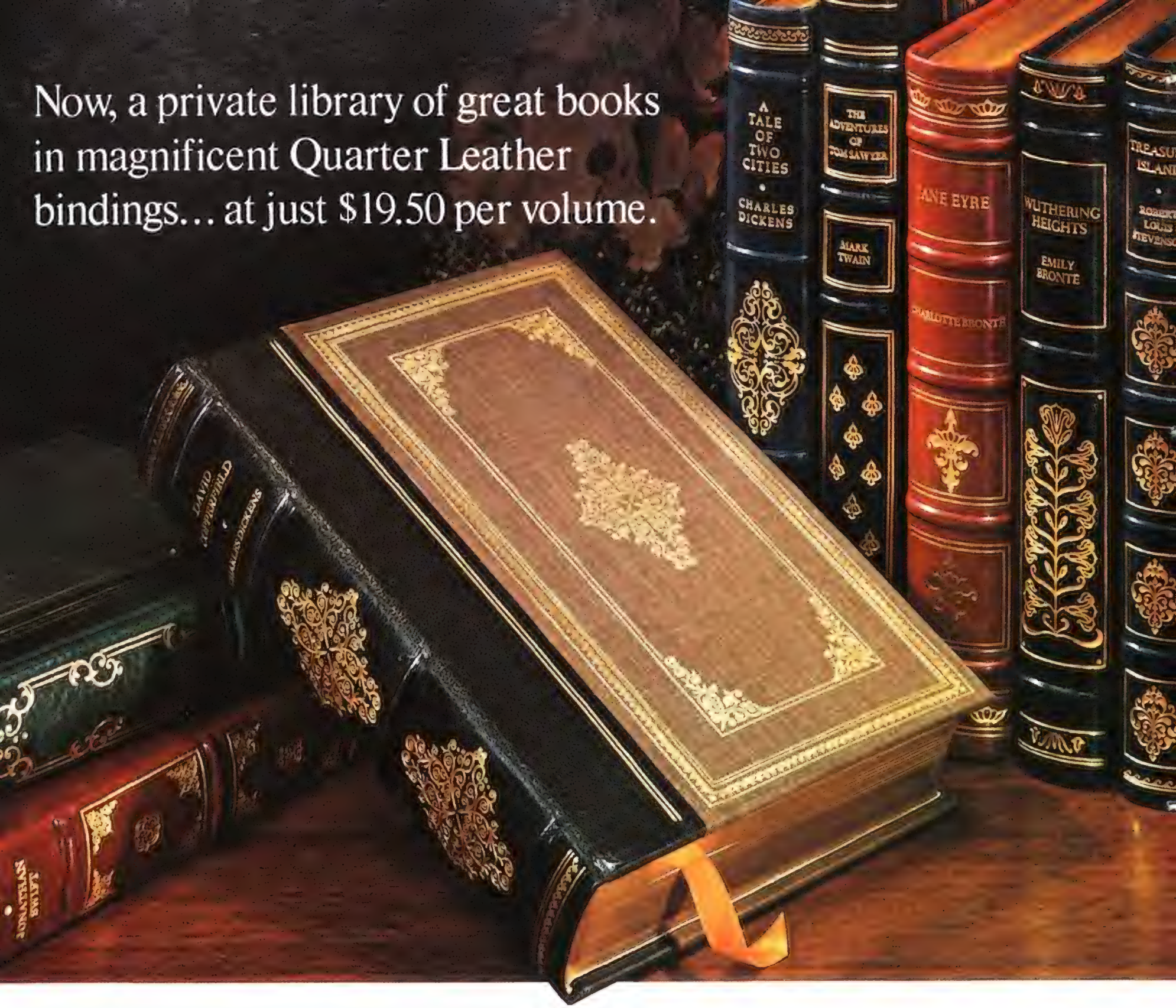

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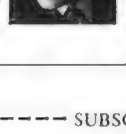

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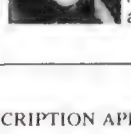

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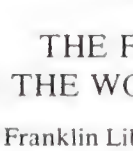

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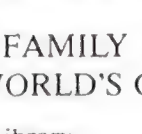

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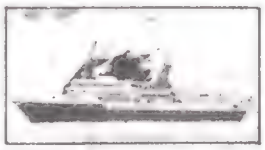

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Letters to the Editor

Search for oil

Dear Sir: In William MacLeish's article, "Far out in the Baltimore Canyon, oil companies play for high stakes," in the December issue, the rough men and the rougher work in the search for offshore oil were well portrayed. But some poetry was left unexplained: how did the open shaft beneath the deck come to be termed the "moonpool"?
David M. Dunn
Muskegon, Michigan
Officials at Tenneco say that the term has been in use a long time. They think it originated on drill ships with pools that reflect the moon at night. Ed.

Alaska

Dear Sir: Although I am an old lady today, S. Frederick Starr's article, "Why did Russia let Seward's folly go on the cheap?" reminded me of a time, in 1944, when I was curator of the museum at the University of Alaska, near Fairbanks.

Your article mentions only Sitka, but I remember at Dutch Harbor the bishop's house, the governor's house and the orphanage were still standing. The bishop's house in Kodiak was still in use, as were many churches in various cities.
Dorothy Holverson Novatney
Laguna Hills, California

Llamas

Dear Sir: We were pleased to see the article on llamas, especially since we have friends who have a herd of llamas and guanacos (not to mention goats, deer, chickens and peacocks) in their ten-acre backyard. We have become great lovers of the animals and agree with Sharon Herriges, whom you quoted as saying, "I don't think there's another animal that gives so much in return for its care."
Alisa L. Ray
Baton Rouge, Louisiana

Dear Sir: I was delighted to find seven pages of descriptions of my favorite animal. Delores de Llama was our first, and we now have eight more llamas, including Spot [below], keeping her company, each with its own name and personality.

The temperature in Wisconsin ranges from a humid 98 degrees F to a windy minus 20, and the llamas have not only survived but thrived through all extremes.

I have nothing but praise for Jack Fincher's article and hope it does much to increase a love for and understanding of the llama.
Julie Borges
West Bend, Wisconsin

Under watchful eye of his mother, Spot, only three hours old, greets owner.

Corn

Dear Sir: Noel D. Vietmeyer's article, "A wild relative may give corn perennial genes," was especially interesting for an ex-farmer who has had to confront the vagaries of the hybrids.

You speak of the nation losing 15 percent of its 1970 crop to the Southern corn leaf blight, but when it struck central Indiana our crop was reduced by 50 percent.

I think the high-yield myth was perpetrated by the seed growers. The old system of saving seed for next year pro-

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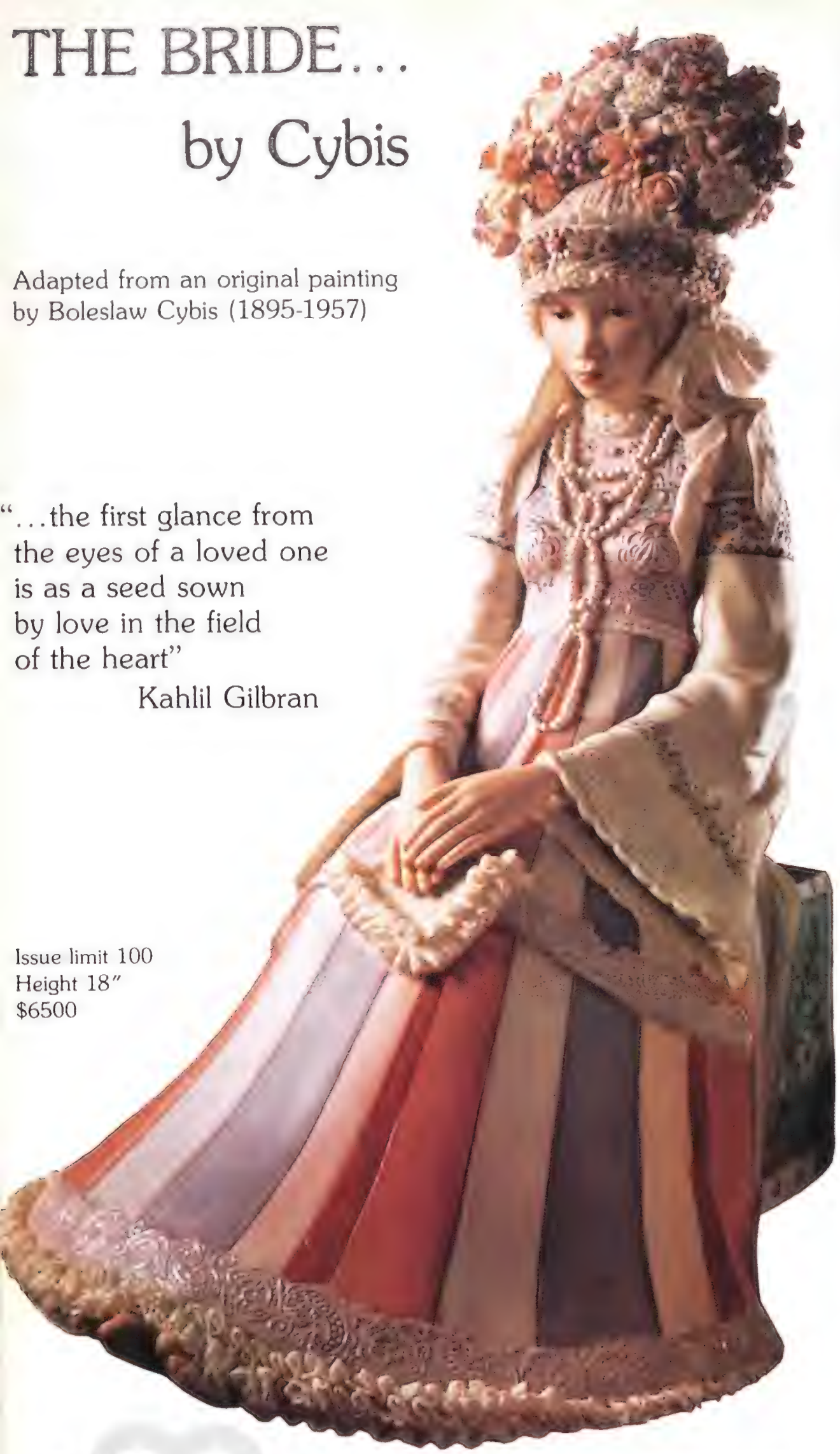

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duced lower yields, but you didn't have to run up a bill for hybrid seeds or spend fantastic amounts of money for weed killer and fertilizer or the machinery needed to accomplish the application.

If the cross with the perennial plant can be accomplished, it will be a revolution in farming—the implement manufacturers will make a bundle in marketing new products, and the fertilizer people will have to rack their brains for change in grades and strengths that will not damage the rhizome systems of the new perennial. I do not see this future breakthrough reducing the farmer's expense of producing crops. Probably the most important event will be a crop that may be grown in arid and wet areas, a means of helping to feed the Third World.
David M. Arnt
Sarasota

Dr. Paul Harvey, corn expert at the Department of Agriculture, explains that the corn belt as a whole suffered an average loss of about 15 percent of its total crop, but damage in some areas, particularly in the southern part of the corn belt, was as much as 50 percent. Some entire fields in the northern and western corn belt escaped damage. The improvements contributed by the breeding of new hybrids are adding one percent a year to our total corn production, and one percent a year of a crop planted on roughly 70 million acres annually is a whale of a lot of feed. Ed.

Dear Sir: Your article presents a subject that is continually in need of discussion outside the confines of the disciplines of crop science and plant pathology—crop vulnerability due to genetic uniformity. The uniformity of our crop plants and the resultant potential for recurrences of epidemics like Southern corn leaf blight should be presented to the widest possible audience so that the wisest decisions for use of our crop resources can be made at all levels from grower to breeder.
C. Lee Campbell
Department of Plant Pathology
N.C. State University
Raleigh, North Carolina

Albright-Knox Art Gallery

Dear Sir: Your superb tribute to the Albright-Knox Art Gallery takes me back, in fact further back than the author. Author John Russell credits 1955 to 1958 as

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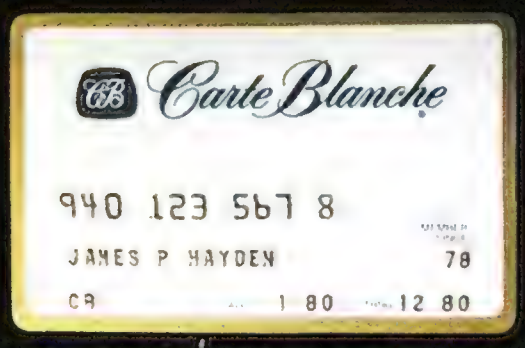

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the origin of the modernist era in Buffalo.

I suggest a decade earlier during the era of Andrew Ritchie, who introduced not only modern art but—heresy—industrial design into that Grecian temple.

Ritchie's "Good Design Is Your Business" brought the 1947 Studebaker, kitchenware and office furnishings in for the show, and the show brought thousands into the gallery for the first time. I had the small part of publicist, and it was fun!

John T. Foster
Keene, New Hampshire

The article mentions that Ritchie "showed a spirit of initiative in the field of modern art." John Russell's article discusses modern art—not just being introduced, but as a continuing, growing part of the life of the gallery and Buffalo—as it came to be when Gordon Smith and Seymour Knox began to collaborate. Ed.

Washington architecture

Dear Sir: I wish that James M. Goode, in his generally excellent "Vanished Washington . . ." had followed his own philosophy, "When some landmarks go, it is a case of good riddance. . . ."

I refer specifically to his comments on the urban-renewal program in Washington. He bewails the "noteworthy Greek Revival and Victorian houses and churches . . . indiscriminately replaced by blank blocks of 'international' style attached houses and multistory apartment buildings." But there is ample documentation to show, for example, that Southwest Washington, before the area was rebuilt, was one of the most miserable slums in the nation.

The Southwest was cleared and rebuilt according to a very specific plan, developed over a long period of time by some of the nation's outstanding planners.

Old Southwest never was a Camelot, any more than the new Southwest purports to be. But, as a convenient, heterogeneous area, it is lots, lots better than it used to be. I know. I lived in the Southwest during the 1930s, worked there in the 1940s and '50s, and I've continued to keep in close touch with developments there as a former information official with the Urban Renewal Administration and the U.S. Department of Housing and Urban Development.

Sydney H. Kasper
Silver Spring, Maryland

Author Goode believes in both the pres-

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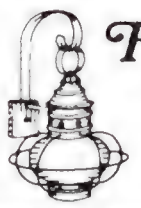

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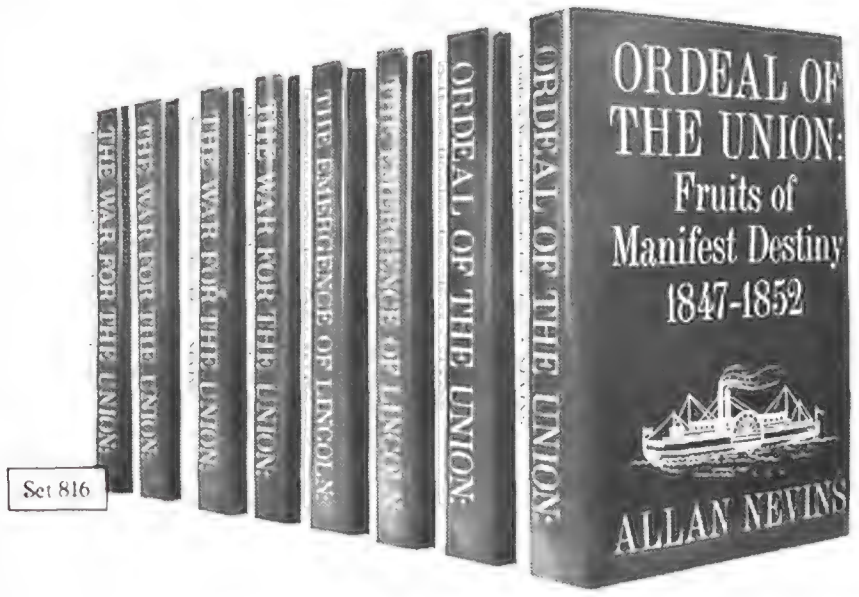
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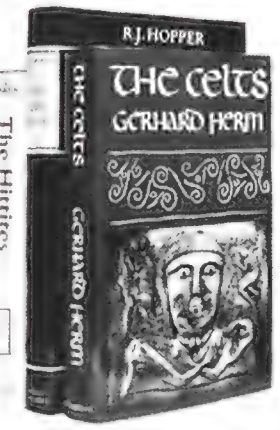

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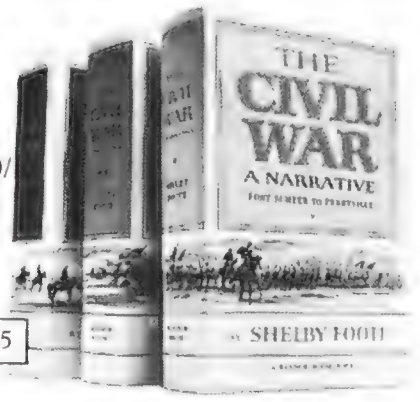

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ervation and reuse of 19th-century buildings. He agrees with Mr. Kasper that the Southwest was a slum before urban renewal, but suggests that it could have had a successful revival as in the Georgetown and Capitol Hill areas, where it has been demonstrated that there is a market for old houses. Ed.

Phenomena, comment and notes

Dear Sir: I have to disagree with the concluding statement in the item on semiprecious gizzard stones of the extinct moa. I doubt that "these birds were able to make fairly precise 'mineralogical assessments' since they chose only the hardest kinds of stones."

It seems more probable that the moa picked up many rock types of all hardnesses to use as intestinal pulverizers. The softer ones were likely destroyed by the grinding action and so not seen. It is also possible that a semiprecious stone is more likely to catch the eye and be collected, giving the appearance of greater frequency of occurrence.

Kenneth A. Cameron
Oregon City, Oregon

Dear Sir: Regarding the item describing an Israeli device for "cooking a cold," don't underestimate this idea. Nothing that I know of can give such instant relief when your sinuses are absolutely plugged than letting a very hot shower play full on your face and forehead.

Alexander W. Blackhall
Pebble Beach, California

Dear Sir: The section on "The cost of art" mentions "Solvents, such as benzene, are narcotics and worse, causing leukemia. . . ." Benzene is not usually considered a narcotic in the same sense as morphine or heroin; however, in sufficient amounts, it can cause a central nervous system depression. Although initial exposure can stimulate leukocyte formation, prolonged exposure inhibits white cell precursors and causes leukopenia or low white count. This may explain why benzene was once considered for the treatment of leukemia.

I still believe in the motto *Ars gratia artis* even if it is tempered with newfound toxicological wisdom.

Michael F. Heiman, M.D.
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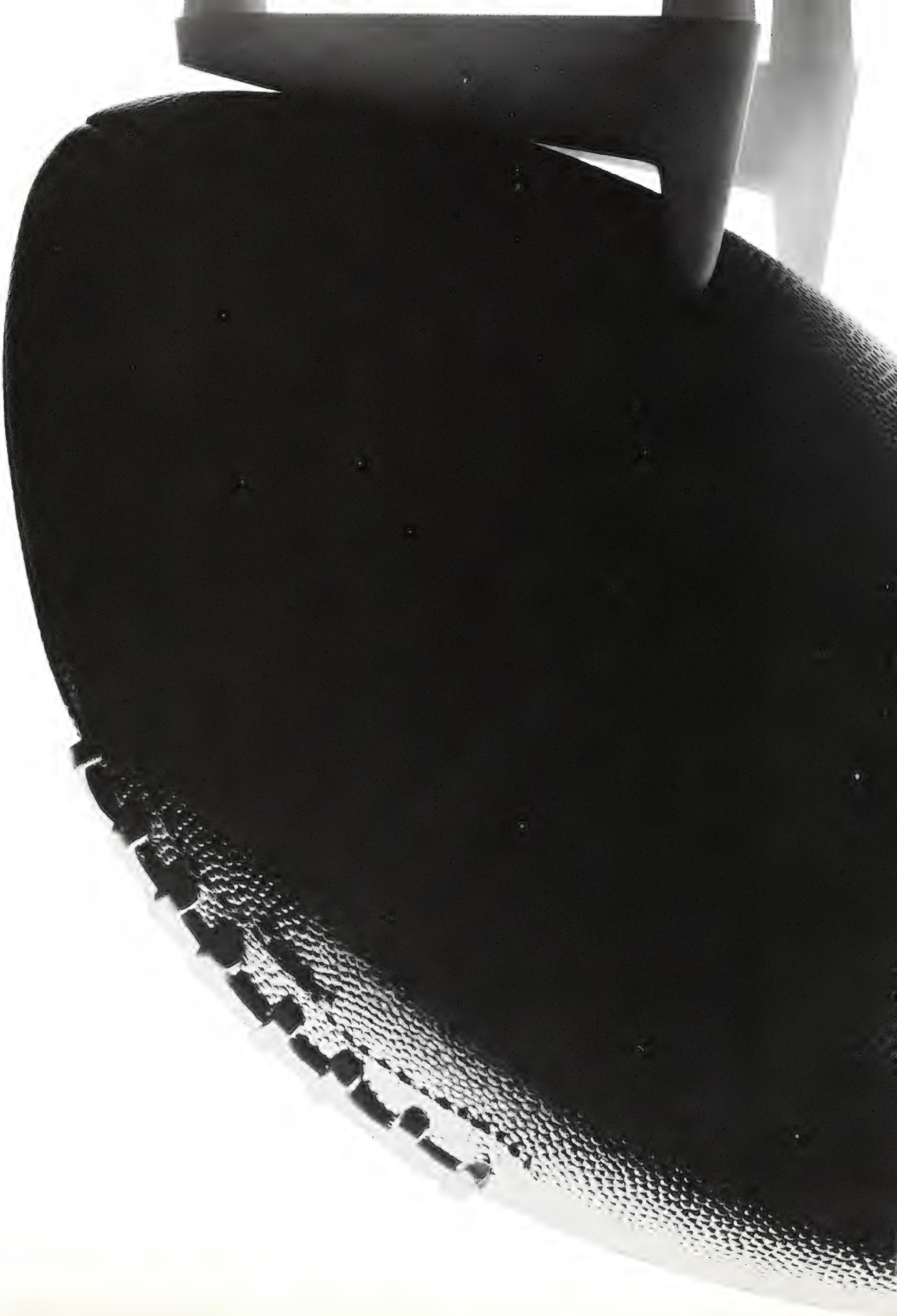
GTE



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Phenomena, comment and notes

On a sunny beach, a cooperative man muses on the death of the dinosaurs and the ultimate fate of Niagara Falls

Whichever of the Founding Fathers worked out the compromise that landed the nation's capital in what is now Washington, D.C., had a refined sense of symbolism, natural history and maybe humor. It is in many ways the quintessential city of compromise (which we are alternately informed every four years is either a good thing or a bad thing). Many northernmost southern plants occur here, as do many southernmost northern plants—an appropriate hodgepodge of habitat that in turn leads to a rich fauna. Birders, like political writers, love it here.

The climate is generally—and in a parallel manner—undecided. Autumn is nice enough, once it makes up its mind to show up, but a bit weak-kneed compared to a flaming-red New England maple stand, or to the forthright golden carpet of aspen leaves that you can see in the Rockies.

Spring in Washington is widely heralded, but chiefly because we've imported a lot of flowering trees from Japan and elsewhere; as a meteorological matter, it is a bit wobbly, uncertain of the difference between spring and summer, the latter being blatantly metaphorical—hot air.

Winter is the worst. Here it generally rains a cold rain almost on the verge of snow—neither northern crispness nor southern gentility. Gray skies, endless gray skies. Not what Henry Clay meant by compromise at all.

Winter in Washington is actually rather short, but it seems interminable. So, on its arrival, I decided to indulge in my favorite winter sport: flying. To Florida, a good place to reflect on the passage of things and events. A beach, lapped by the not-so-warm Gulf of Mexico, a beach made up of the remnants of zillions of shells—mostly clams and other bivalves—is a good place to get a bit of perspective as you look with subtropical lassitude through the literature of science.

A peaceable hypothesis

Indeed, almost anything seems agreeable in such circumstances. In an airport bookstore, I ran across *People of the Lake* by Richard E. Leakey and Roger Lewin, a paperback version of a book I should have read when it first appeared in 1978 but didn't. Something of a tract, it argues from fossil evidence and present-day ani-

Ramapithecus, perhaps: only the jaws, shown here in red, have been recovered.

MEETING THE DEMANDS OF SOCIETY IS NO EXCUSE FOR BUILDING A BORING CAR.

If one accepts the dismal prophecies emanating from the automotive community, it appears we are destined to suffer a generation of thoroughly boring automobiles.

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(Naturally, our fuel efficiency figures are for comparison purposes only. Your actual mileage and range may vary, depending on speed, weather and trip length. Your actual highway mileage and highway range will most likely be lower.)

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All in all, in a time of lowered automotive expectations, amidst increasing mediocrity, the engineers at BMW have actually improved the BMW 528i.

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mal behavior studies that mankind is not instinctively aggressive. I feel very unaggressive. It says that our ancestor *Ramapithecus*, a Miocene ape, arose 12 million years ago and began at some point to become a social animal. At some other point, it (or something very like it) rose up for unexplainable reasons onto two legs. As it got more social, about 2.5 million years ago, it needed to get smarter—not to survive the environment, not to hunt, not to bash poor old *Pithecanthropus* up the side of its head, but to get along in the increasingly complex society it was, willy-nilly, creating for itself.

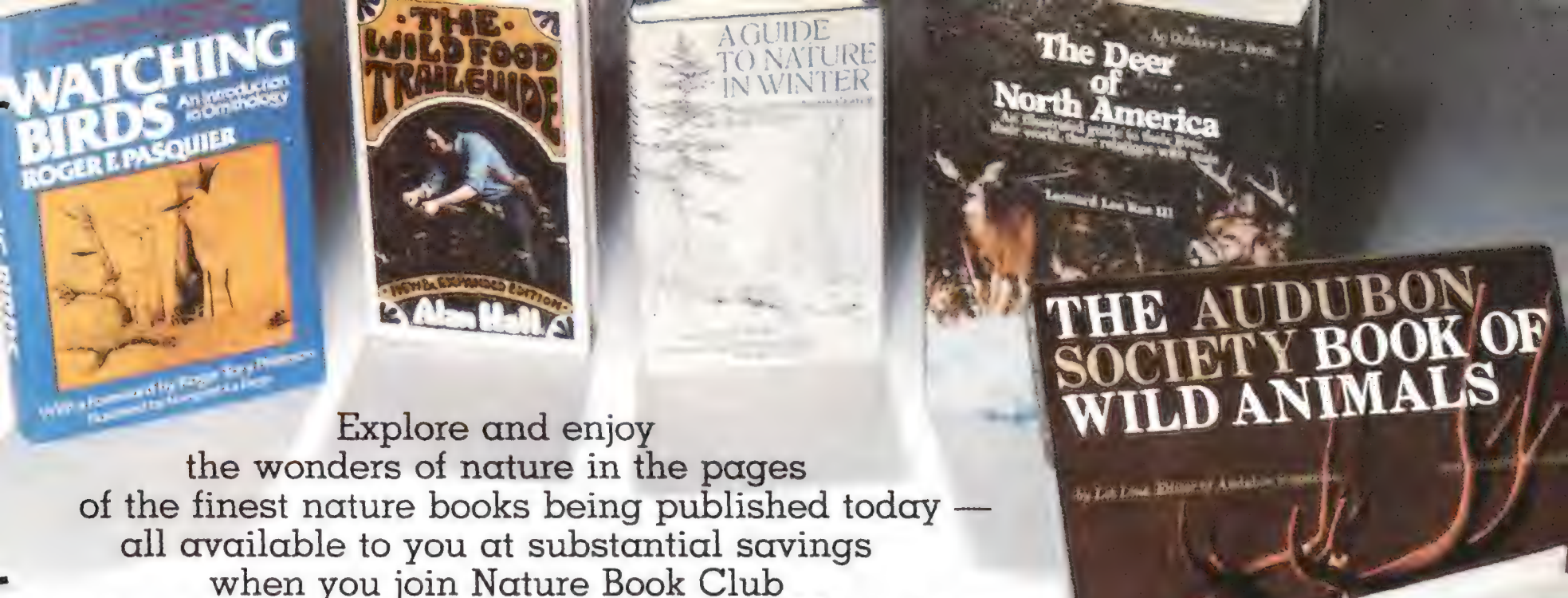
Before long, in geological terms, some one of its kind—almost certainly female—made something like a basket. That meant she could nip off and bring back some berries to share with the family (how many berries can you carry in your bare hands?). This freed up the males to scavenge and hunt meat. It was a new thing among creatures, Leakey argues, a dual economy based on cooperation.

If we are warlike today—and we are—it is not, says Leakey, a biological inheritance. Quite the opposite. Genetic material, he suggests, has too many smarts to package itself in the vulnerable armor of the instinctive aggressor. War, he says, is a cultural invention.

Well, most likely people will argue about Leakey's gentle theory for decades. It says, for example, in *Nature* (Vol. 282, No. 5737) that *Ramapithecus* dates back only eight million years. What's a few million years here or there? Probably no one will ever know for certain how we really arose and be able to say, with the necessary precision of detail, what we are and why we are. Meanwhile I'm sitting on the beach, feeling perfectly cooperative, watching the pelicans, absently sifting through the magical accumulation of sea shells, and I'm not worried in the slightest about February in Washington. I'm not even worried about the distinct possibility that, as an astronomer tells me, the sun is shrinking faster than heretofore imagined.

Bye, bye, honeymoon

By way of perspective on the impermanent, one is struck by a report from Canadian geographer Keith Tinkler in *New Scientist* (Vol. 84, No. 1181) that Niagara Falls is suffering its downfall (a pun no doubt intended). Everyone—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well, most people—knows the Falls are changing rapidly. Erosion and all that. But Niagara Falls started up (or down) only 12,300 years before the present (B.P.) and has changed its venue many times, it seems. As glaciers retreated, meltwater began flowing, seeking in the manner of water the lowest, easiest way out. But as the weight of the glaciers moved off the land, the land rose up. Much meltwater that had flowed toward the Mississippi River headed east instead, making the Niagara a choice outlet for the waters of the then-burgeoning Great Lakes. With the continuing recession of the glacier and uplift of land, the easiest route for the meltwater continued to change, shiftily, around the compass, until 3700 B.P. when it returned to pretty much the current route.

In any event, the Canadian landmass continues to rise, inexorably threatening to reroute some of the water that now thunders over Niagara Falls toward the Mississippi again. But before the U.S. Army Corps of Engineers starts planning more levees, it should be pointed out that we are talking here of geological time—a short bit of G.T. to be sure; one measure of this is that in the term B.P., P. means 1950. That's 30 years before *the* present. I, for one, intend to calm down about the loss of Niagara Falls.

There are matters more pressing—and many less pressing—to concern oneself about. Indeed, sitting on the shell beach, watching the Sandwich terns wheel in the sun, hover like angels, and dive-bomb the calm surface of the Gulf as they have no doubt been doing since before Niagara began its downfall, one wonders if *anything* is really more pressing than anything else.

Cold water on the dinosaurs

Dinosaurs, for example. Not very pressing, you might say, because they no longer exist. But to some people they present an irritating burr under the intellectual saddle: how come they died so suddenly? Well, suddenly means a long time in G.T. But along with them, a whole lot of other species met their downfall, too, including a mess of marine creatures. No one has satisfactorily explained what happened.

Inter alia, one should be aware that a current biological theory says that you and I and other living critters are nothing more than temporary housing for the

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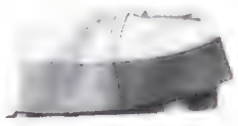

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genetic material that began in some soupy sea billions of years ago and has, in a vague if seemingly willful manner, tried out various kinds of packaging in order to perpetuate itself. In this sense, the dinosaurs didn't die out; they found a new box, as it were, just as the folks in Battle Creek change the cereal boxes every now and then. Dinosaurs gave rise to birds and if you don't believe it, take a look at the brown pelicans that emerge as if from nowhere over the Gulf of Mexico and with improbable pride, and in spite of their wholly unlikely form, fly silently and gracefully—huge and primitive—overhead as if you and your geologic age didn't exist. Don't tell me pelicans couldn't have been made out of leather, just like crocodiles, except for some evolutionary quirk.

Back to the great extinction. The latest theory, at least B.C. (before Christmas 1979), points the finger at the Arctic Ocean, a delightfully tangential area to blame for the loss of a huge population of tropical lizards and other warm-weather fauna (for whom I have a special sympathy). But in those days, says geologist Stefan Gartner of Texas A.&M., the Arctic Ocean was a closed sea, much reduced in salinity and some 15 degrees colder than the other, properly warm oceans of the world. Then, with the infuriating arrogance of northern phenomena, the barrier was breached—between Greenland and Norway—and cold, nearly fresh water poured into the world's oceans, wiping out a number of innocent marine creatures which preferred warm, salty water as their right. With colder oceans, and thus a colder climate, came drought and seasonal variations that knocked out the tropical vegetation and more susceptible land creatures, including those dinosaurs that hadn't realized they should be birds.

As *Science News* points out (Vol. 116, No. 21), Dr. Gartner's theory has been called into question (that's news?) by others who say that his evidence, based on deep-sea core samples, is incomplete. But, as one researcher is quoted as saying of the theory, while the evidence may have been undercut, "it's the only one we really have that explains the whole thing." Lollygagging on the Gulf among the black-bellied plovers and the soft-bellied pleasure-seekers, I find the cold-water theory totally plausible.

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Around the Mall and beyond

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Oh, yes—there may be a flurry of activity within them when a new exhibit is being set up, but then it's back to normal. Sightseers swarm in, children breathe on the glass cases, guards rock on their heels and curators occasionally stroll past, hands clasped behind their backs, glancing about approvingly.

That's the vision of this museum complex, right? Balderdash! If a set of cameras were trained on the exhibit halls, taking time-lapse photographs, the results would bewilder us with their restless images. We would see the insides of our museums pulse and twitch and change shape and size. Partitions and walls would rise and fall. Great exhibit halls would expand and contract like the ventricles of some giant heart.

Even as I write this I am aware of a distant thudding. It's the inevitable sledgehammer tearing something down (not too vital, I hope) to make room for something else. Such sounds no longer disturb. They happen all the time.

Recently the sledgehammers produced the remarkable discovery displayed below. People whacking away at a wall in the Hall of Paleontology, over at the Museum of Natural History, suddenly uncovered *Diana of the Tides,* who, you will note, was fairly well uncovered already.

Diana and her horses stretch across a canvas which takes up 280 square feet of paleontological wall space. It matters not a whit what Diana has to do with that particular science, since no fossils of her have ever been discovered that I know of. But, the fact is, she belongs on that wall, has been there since the museum was built, and is far too big to be moved away.

The painting's size explains why it was walled up 17 years ago when the Hall of Paleontology went through one of its twitches. A balcony was needed more than Diana, so a wall went up right over her. I presume we knew she was there all this time. The Institution has people who keep track of walled-up art, and this column touched on the subject in December 1976. I'm sure we knew about Diana. Pretty sure, anyway.

Diana was painted by John Elliott, of whom I know nothing. He obviously was under the spell of that splendid old illustrator, Maxfield Parrish, who delighted the Teens and Twenties with his classic, symmetrical scenes: a softly draped female figure between matching Grecian urns on a terrace overlooking some un-

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likely arm of the sea that nestles amid fierce mountains, all of it under a sky of a peculiarly luminous blue that became his trademark.

Well, *Diana of the Tides* is reminiscent of this: softly draped (God knows) balancing on her rainbow-hued shell-chariot, flourishing her huntress' bow while being hauled ashore at a great rate by white steeds whose harnesses somehow got mostly lost in the flying spume. If she fails to halt those horses, they'll run right into a savage mountain cliff.

Go see it for yourself when the hall opens. The paleontology people say their newly vitalized hall—it's on your right after you enter the museum rotunda from the Mall—will open in four phases. The first is due for completion in April.

Diana was given to the then-new museum in 1908 by Ambassador and Mrs. Larz Anderson. He was an eminent diplomat who lived in Washington when he wasn't traipsing around the world. I remember the story about the Larz Anderson bridge which links Boston to that part of Cambridge where the bulk of Harvard lies. The bridge was lighted at night by streetlamps with iron shades, each bearing a spike. And they say that during World War I these had to be removed because of a public outcry. The shades looked too much like the steel helmets of the Kaiser's soldiers.

On the first of this month, continuing to the last of it, a display of photography will enliven the special exhibits gallery on the third floor of the Museum of History and Technology. This exhibition is called *We'll Never Turn Back*. Those who marched for civil rights, or watched the aroused students of the 1960s do so, may remember those words as the title of one of the songs of the day. It was written after the murder of a Mississippi farmer-minister who was trying to support voter-registration in that state.

The exhibit will contain the work of 13 photographers who covered the Civil Rights Movement. It's part of a national conference on that movement which the Smithsonian helps sponsor. That conference, called "Voices of the Civil Rights Movement," is already under way and will continue to focus on the old songs of the activists for another three days in this month. One of the things that will happen is a song-leader workshop-concert on the evening of February 2, and two on

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the 3rd, in which the old music will be remembered and demonstrated. There are hundreds of songs, many old church songs in which a word or two is altered to carry the civil rights message.

I marched once, in Washington, and remember some of the civil rights songs rising and fading away all around me. But more than that, I think of that march as a time of great gentleness. I've never before or since seen so many people so concerned with helping each other along, so quietly, persistently thoughtful of others. I look back on it as a day when I was smothered in ambulatory kindness.

In New York this month, more photographs at our Cooper-Hewitt Museum stir up another kind of nostalgia. For that display—objects as well as photographs—deals with the great ocean liners that plied the Atlantic, heavily laden with the affluent. Those great ships are almost gone now, and so is their style of travel. They had mighty little in common with *Love Boat*, believe me.

All of us who were children back in the ocean-liner days retain a concept of travel that seems undeservedly glamorous today. Even in third class where students found their niche, I eventually among them, there was a sense of gracious leisure. It was obvious that first class was pampered by grand service and incredible cuisine. Even third class got a little of that, and young students who said "please" and "thank you" and cleaned their nails

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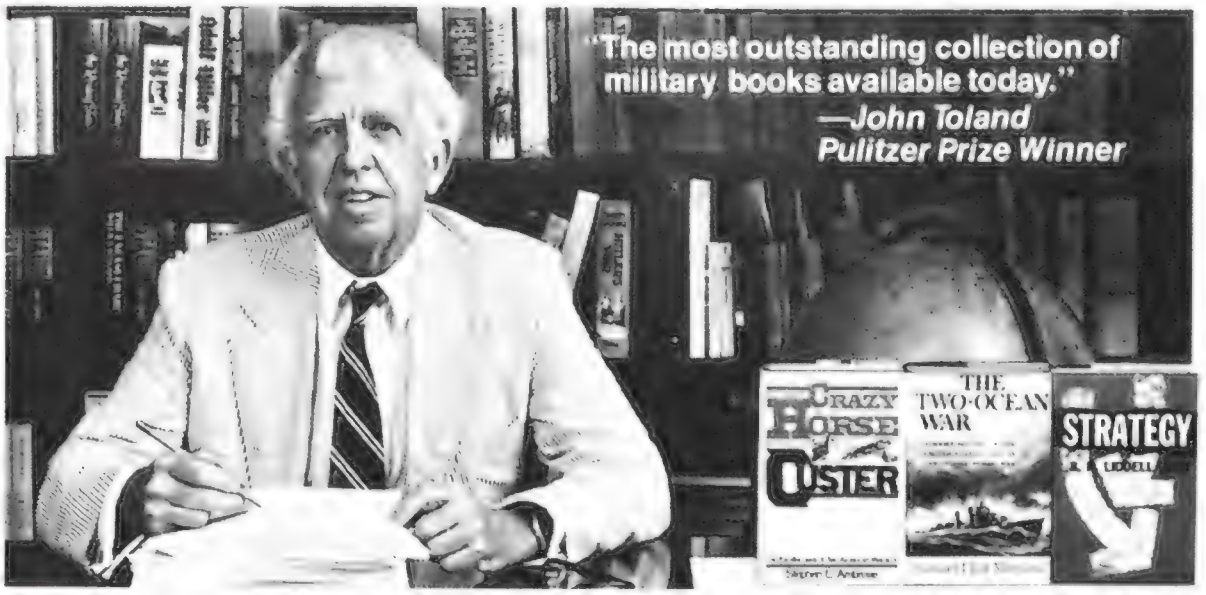

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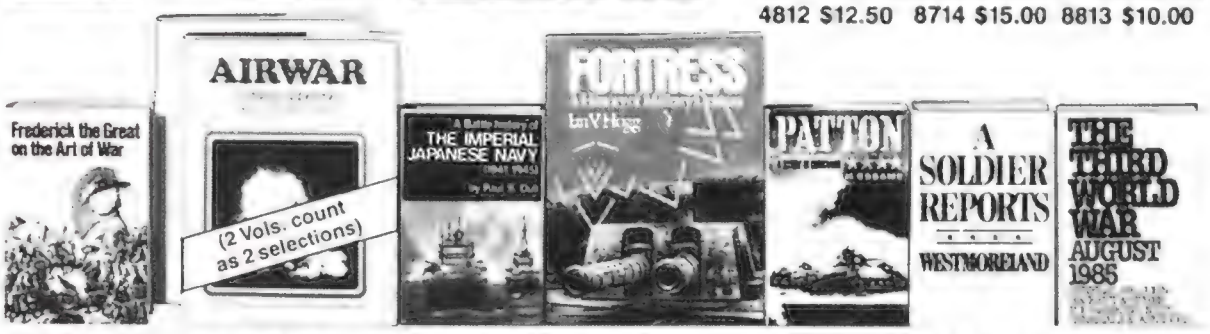

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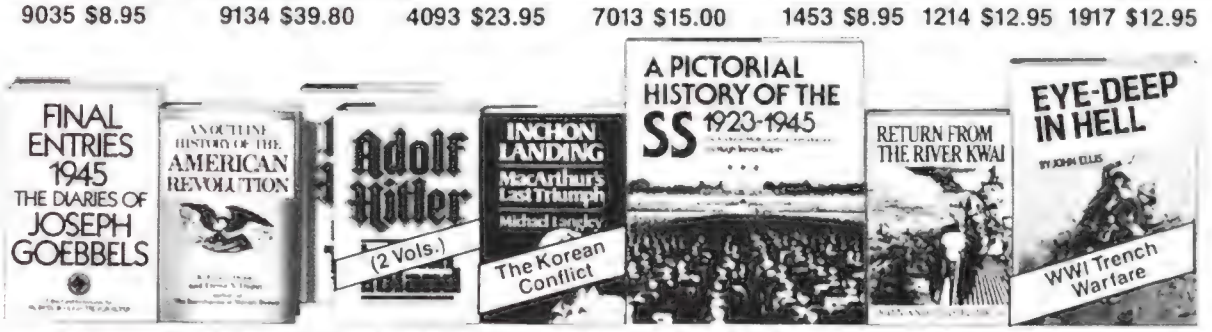

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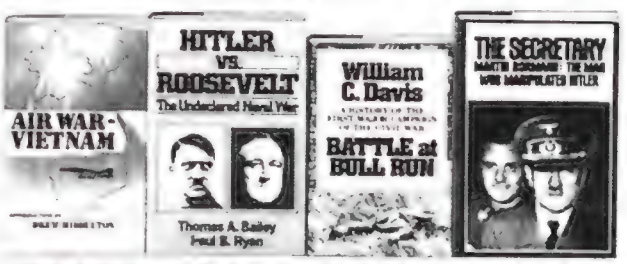

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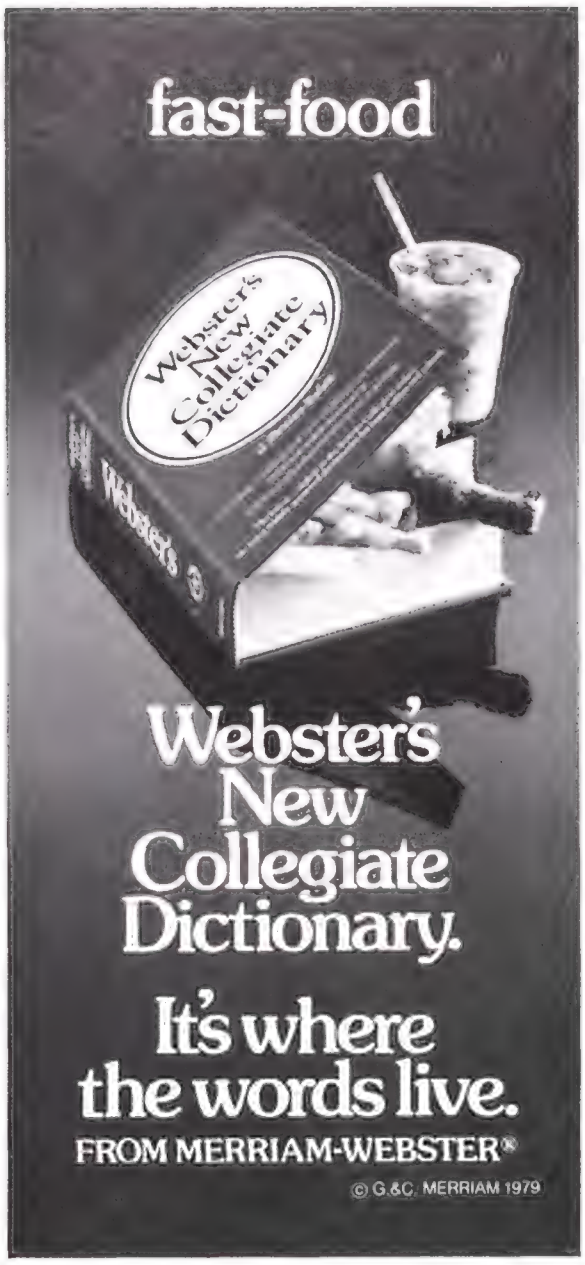

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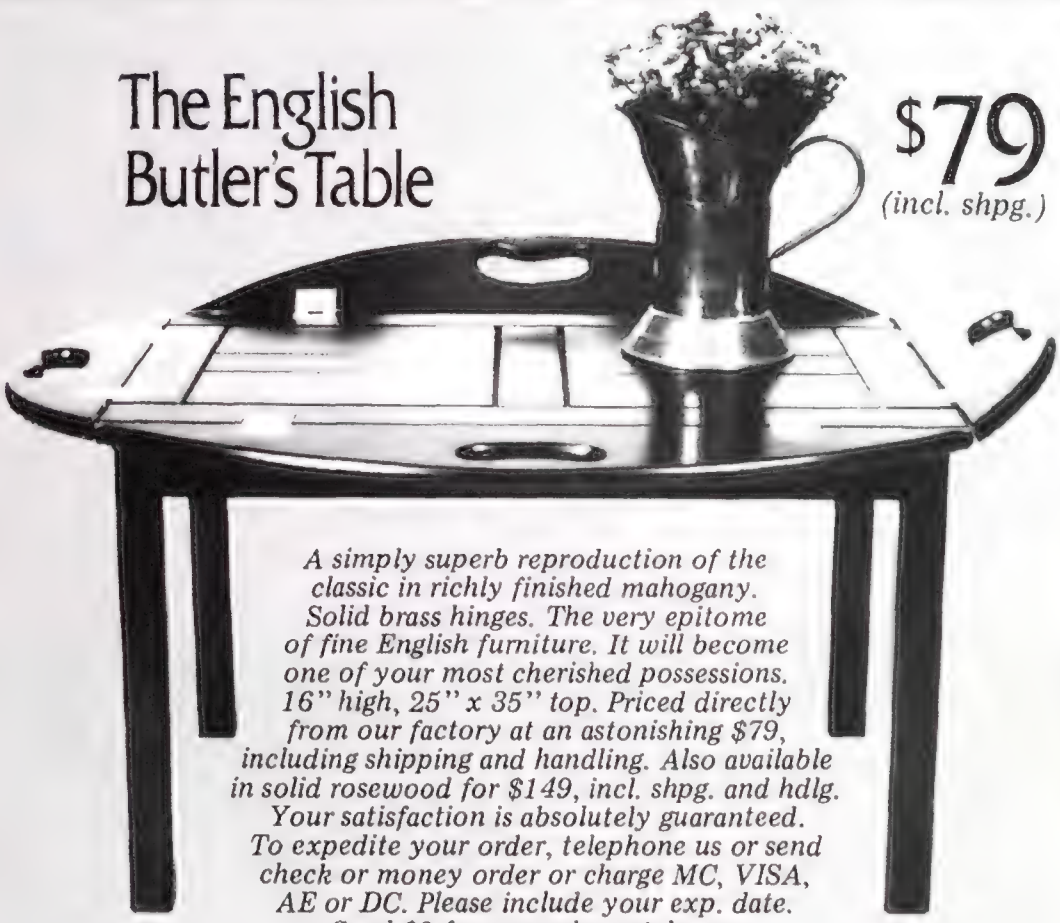

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sometimes got asked up to first class to dance with some millionaire's daughter, and then the ocean liner turned into something right out of a Twenties novel (illustrated by Maxfield Parrish), what with hovering waiters and glittering trays filled with canapés and tinkling ice and . . . ah, youth (as Joseph Conrad said), pass the bottle.

Little wonder that my generation continues to travel whenever possible. We are endlessly searching for one more glimpse of that glamour. And what do we find? Aerial buses where our legs are doubled up, our bottoms fall asleep and all the people around us are soft and huge and slop comfortably beyond the boundaries of their seats and invade ours. Ben Lawless described modern aerial comfort with admirable bitterness in our September 1979 issue.

We remember the ocean liners all right. I, for one, will travel to New York, grimly cramped, desperately trying to get an elbow onto my armrest, to visit the Cooper-Hewitt and mist up a little.

To speak of more strenuous travel, the people at the National Air and Space Museum have almost blandished me into running on the Mall. Not jogging, mind you, but taking part in the second annual Smithsonian Coed Fun Run. The first one was run off recently and won handily by a bunch of jocks from the Air and Space Museum. One of them, a young lady with extraordinary muscles, has been badgering me to take part because she wants to see me wearing a T-shirt inscribed "Around the Mall, and Around, and Around."

Apparently the idea was for the race to work out so that four team members (two men and two women) crossed the finish line together. It's just the sort of computer problem that the Air and Space people would be good at. One of the losing teams has promised to devise new rules for the next race.

Barney House has been renovated and is open to visitors who have made reservations for a walk-through tour. Back in the palmy Edwardian days, Alice Pike Barney built this house—her studio house—in Washington to serve as a nucleus for what arts the nation's capital could provide. Mrs. Barney thought of the field of art as pretty meager here in Washington. But she had been used to Paris.

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She was a bright, rich, *avant* Ohio girl who hit the New York scene and married a man she found dull. There was money enough to do anything, so she lived in France most of the time with her two daughters, Natalie and Laura. She knew Whistler, among other artists, and she was enraptured by the idea of a salon, where artists and writers and others involved in the arts would meet and talk and sip and be very chi-chi and sometimes even a little creative.

When her poor old husband died, Alice came back to Washington and up came Barney Studio House, on Sheridan Circle, to give those rustic American politicians a real salon.

Over the years since the early 1900s, the house has remained an attractive and notable edifice, now amid some embassies. Alice's idea of making it a focal point for artistic glitter worked after a fashion, for it was a place for painting and music and readings and endless brittle chatter.

Alice died in 1931 and the Barney Studio House went to her daughters, who were mostly abroad. In 1960 they gave the place to the Smithsonian. Much of it was carefully maintained as a studio—though not used as such—and some of it eventually did service as a place where visiting dignitaries could be put up.

In 1969, when this magazine was first beginning its start-up program, Barney House was used by one of our staff members as his dormitory—an elegant lodging which I was sometimes fortunate enough to visit.

If you went there with full appreciation of what you were exposed to, you could not escape the vision of ghosts. Lights were kept out or at best only faintly lit. And every shadowy corner seemed filled with flitting shapes. One floor had table and chairs, priceless, I suppose, all in place as though waiting for a surge of loquaciously artistic guests. Then you would trudge past upper sitting rooms, rich with furnishings, often embellished with an easel or piano where the maestros could gambol.

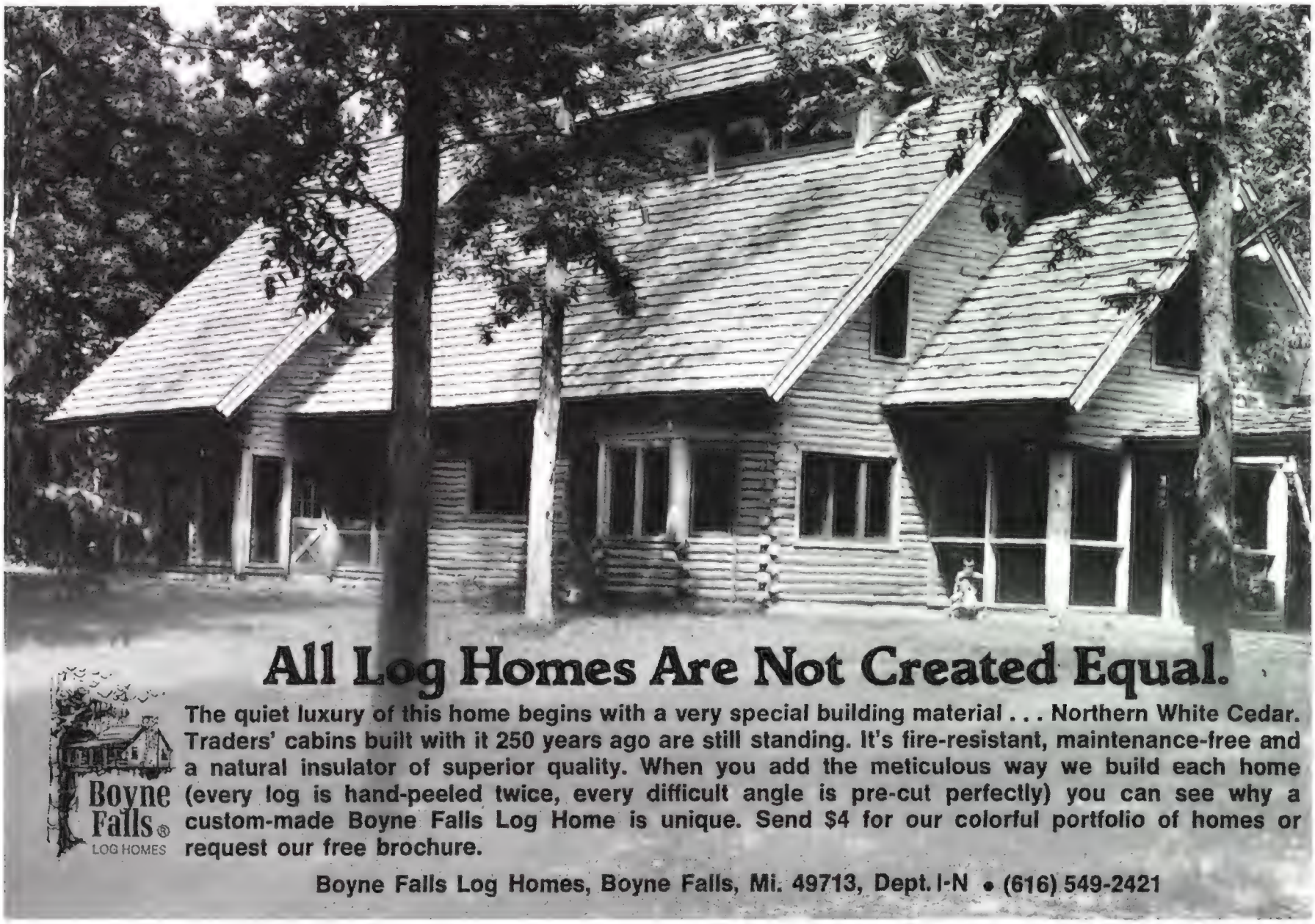
When it was time to go home—much later and darker, of course—the journey downstairs was positively demanding. Back down past all those floors, each gloomy in its darkness, each fluttering with half-seen movement and whispering with half-heard sounds. Never did the prosaic streets of Washington look so good as when you finally reached ground level and returned to them.

Our friend who lived there was always excessively sorry to see his guests leave. Of course. Left alone, he faced a big-city town house that creaked and moaned and jittered all around him. He would come in to work the next day with bags under his eyes and a tic at the corner of his mouth.

Well, I suppose some of the creaks and groans came from the structure itself, gradually collapsing. Anyway, the Smithsonian people were moved out some time ago so that carpenters could get in and keep the place from crashing down. Now they're all done, and the Barney Studio House is open. If you reserve well in advance, you will be taken through and have much more explained to you than I can do here. They want groups of no more than 25 per visit.

Go, by all means. But watch out for those dark corners.

—Edwards Park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Denis P. Burkitt, M.D., D.Sc., F.R.C.S., F.R.S.:

IS DIETARY FIBRE PROTECTIVE AGAINST DISEASE?

The drop in our consumption of potatoes and whole grains may have something to do with the increase in intestinal cancer, diabetes and heart disease—to name a few!

PUBLISHER'S NOTE: Dr. Burkitt spent 20 years as a surgeon in Uganda. He made noteable contributions in the field of cancer research and has a tumour, which he first identified, named after him "Burkitt's Lymphoma." During the last 10 years he has been studying the relationships between the geographical distributions of certain diseases and dietary patterns. His epidemiological studies were an important stimulus to the recently growing interest in the importance of dietary fibre as a possible preventive against many western diseases.

—Richard Stanton

On a classical epidemiological study . . . and what we are learning today.

In 1854 London was struck by an outbreak of cholera, and hundreds of people died while city authorities searched for the cause of the scourge. Finally, a physician named John Snow noticed that the people who had come down with cholera shared one characteristic: They all drew their drinking water from the same public pump. Snow traced the water to its source and discovered that it was drawn from the river Thames just below the spot where raw sewage flowed into the stream. Today we know that water contaminated with human wastes provides a fertile breeding ground for the organism that causes cholera, but Snow

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John Stirling Meyer, M.D., Professor, Department of Neurology, Baylor College of Medicine; Director, Baylor-Methodist Center for Cerebrovascular Disease, Texas Medical Center, Houston, Texas.

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By Jane Eblen Keller

Olympics illuminate the long war over future of the Adirondacks

Intensive development for the Winter Games has produced bitter debate—and compromise—over how to protect the East's largest park

Marvin E. Newman

Controversial dormitories built for athletes are slated to become federal prison when Winter Games are over.

You see the difference immediately if you approach the Adirondack Mountains of northern New York by ferry, across Lake Champlain. Behind you, Vermont's Green Mountains roll away gently. Ahead the Adirondacks are anything but gentle. They are rocky, rugged and wild. One mountain seems to crowd another beyond the shoreline, rising from near sea level to 5,344 feet atop Mount Marcy, some 30 miles away. These are not the highest peaks in the East, but they are the roughest. People training to climb the Himalayas practice here. People searching for genuine wilderness have been coming here for generations.

With the possible exception of northern Maine, the Adirondack Mountain region is the wildest stretch of open space in the eastern United States. The mountains are the biggest chunk of land in the nation protected by state law. The Adirondack Park, run by New York State, covers six million acres, making it the largest park in the country, bigger than Yellowstone, Yosemite, Grand Canyon, Glacier and Olympic national parks put together.

"You can make all the size comparisons you want," says Gary Randorf, a bearded outdoorsman who heads up a private consortium of environmental groups, the Adirondack Council, pledged to keep the Adirondacks wild. "You can say the Park is as big as the state of Vermont. You can tell stories about the people who get lost out there every year. But still it's hard to grasp just how big and how wild the Adirondacks are."

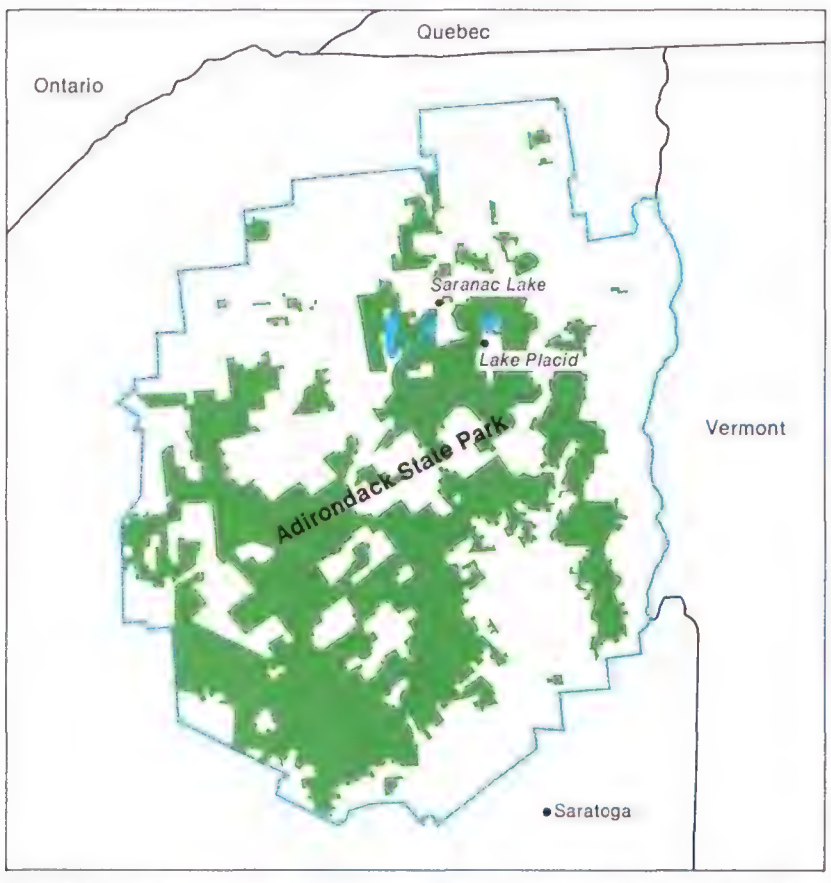
Even this month, when millions of television viewers will be watching the 1980 Olympic Games at Lake Placid, the resort village in the heart of the mountains, the immensity and character of this wilderness may

Although some environmental groups objected, heavy equipment widened highway to Olympic Village.

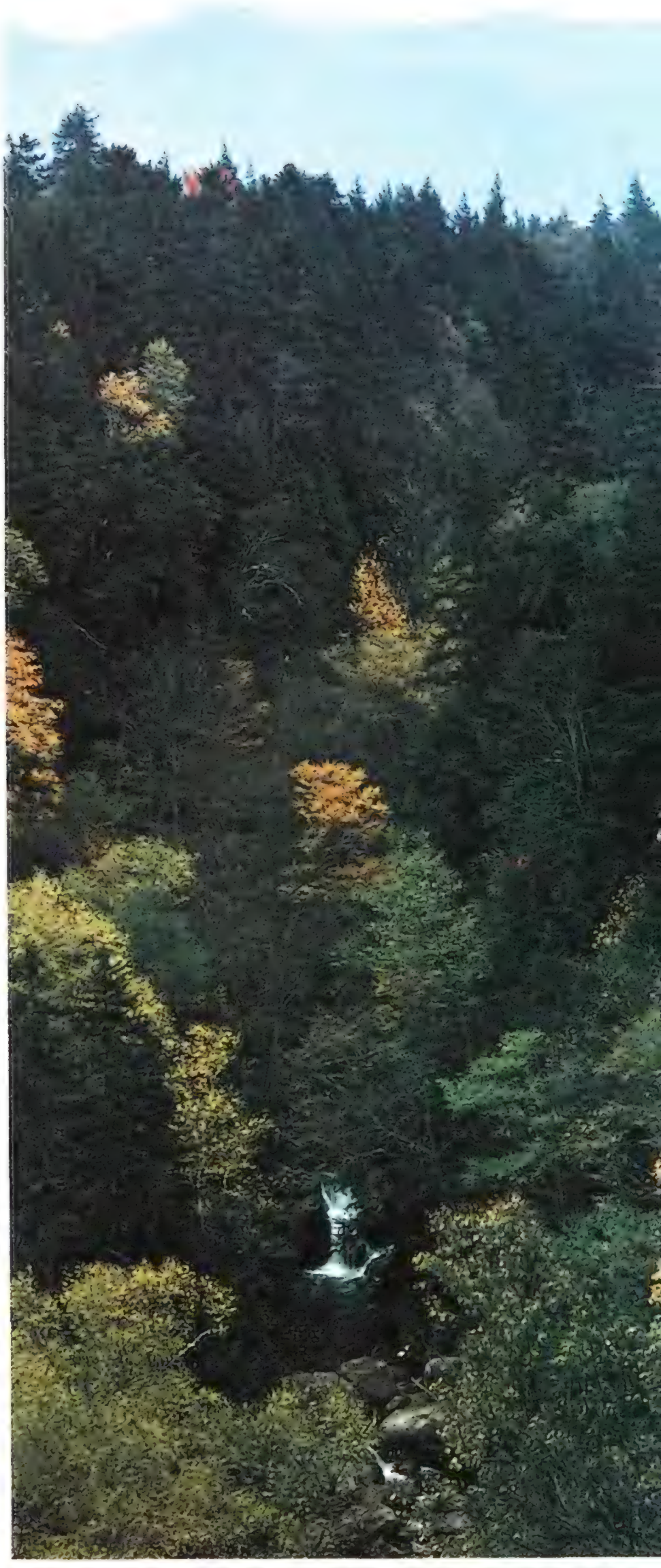
Photographs by Peter B. Kaplan

not come through. Nor perhaps will the special problems of the 125,000 souls who live year-round in the more than 100 towns, villages and hamlets that hug the edges of mountain roads like frontier outposts. The two-week publicity blitz may even obscure the story of the most innovative land-use plan now in effect in the nation, a plan that conservationists are watching as closely as Olympic judges will be scrutinizing the twists and turns of young figure skaters.

Yet when the games are over, when the television camera crews, celebrities and spectators have gone, when Lake Placid residents can again drive their cars



Blue Line marks perimeter of Adirondack State Park; state land is shown in green, private in white.



Heavily wooded steep incline, complete with waterfall, makes this scene typical of wildness that remains.

A view straight down one of the new Olympic ski jumps shows the hand of Man, and perhaps the future.

to work without special permits and move back into the homes many have rented to Olympic officials, two enduring, hard-to-reconcile aspects of Adirondack life will settle in again with the winter snows.

For one, the living will never be easy in this cold, remote, mountainous land. And the means by which the beauty is protected will remain controversial and unwieldy. Yet, the way the needs of the land are being balanced against the needs of the men and women who live on it is, for all the difficulties involved, a success story—hard won and precarious to be sure, but a success story just the same.

Until a couple of years ago, when a near obsession with the Olympics began, the big story in New York's North Country (roughly the area between the Mohawk River and Lake Ontario) was bitter local opposition to the Adirondack Park Agency. Set up in 1971, the APA and its conservation-minded staff began enforcing a zoning plan to combat what was thought to be a crisis: inappropriate development on the then-unprotected 3.6 million acres of private land scattered throughout the Park.

Public control of private land

The trouble with the Adirondack Park is that the state doesn't own all of it, not even half. What the state does own has been protected as forest preserve since 1885; the 1894 constitution requires that it be kept "forever wild." The Park itself was created in 1892; the state then planned eventually to buy up the rest of the land inside a boundary called the Blue Line and make it all forest preserve. It never happened, and today the Park is still a crazy-quilt pattern, with tracts of "forever wild" land abutting private tracts owned by logging companies, towns, wilderness clubs and individuals—and, in the 1960s, by developers.

The prospect of second-home developments, mobile-home parks, tacky resorts and other building for the explosion of tourists—nearly nine million a year—promised to ruin the sense of open space and ecological balance. Thus the APA—and a running feud.

"In the stricter APA land-use zones you would need an APA permit to build a garage in your own back yard," says Phil LaRocque, an aide to State Senator Ronald Stafford, who since 1971 has been fighting to abolish the APA. "The APA plan is fine if you're an environmental major somewhere. But for the ordinary person, it's too complicated, too strict, and many people feel it's helped make the economy up here worse."

Regulating the building intensity for private land —from highly restricted to liberal—primarily according to the land's ability to withstand use, the APA plan *is* fairly technical. That has been a problem for many Adirondack people. And so has the now-classic

A lakefront resort, the White Face Inn, offers both comfort and wilderness. Hundreds of hotels were

conservation dilemma: the sense that outsiders—city-slick, book-taught romantics—are taking over on behalf of Big Government and its "communistic ways," as one protester put it.

"Those APA people came in like gangbusters," says Glenn Harris, the state assemblyman for the region, who with Senator Stafford has been fighting the APA. "They're so afraid native Adirondackers are going to mismanage the use of the land." Harris objects mainly to a lack of local representation on the APA. And he worries about the impact of so strict a land-use plan on the already hard-pressed economy.

"If we were a foreign nation," a real-estate agent in Lake Luzerne said to me, "we would be eligible for aid-to-underdeveloped countries." Unemployment often gets as high as 20 percent in the middle of winter. Welfare recipients form a larger percentage of the population than in Harlem. Restrictions meant to protect wildlife and the environment actually deprive some people of their traditional means of supplementing low incomes: logging, hunting, trapping. The typical Adirondack native, as Glenn Harris points out, is not the one who is likely to own land enough to interest a developer; yet he is the little guy who suffers if land values and tourism drop. The APA has been blamed for causing both.

So "The APA, Another Word for Tyranny," was the bumper sticker of the day a few years ago. Shouting matches between locals and APA officials made headlines. Someone dumped a truckload of manure on the lawn in front of APA headquarters in Ray Brook. One night a man was found pouring gasoline over files.

Anti-APA stickers are still around. But nowadays there are many more reading "Welcome world! We're ready," with the Olympic insignia.

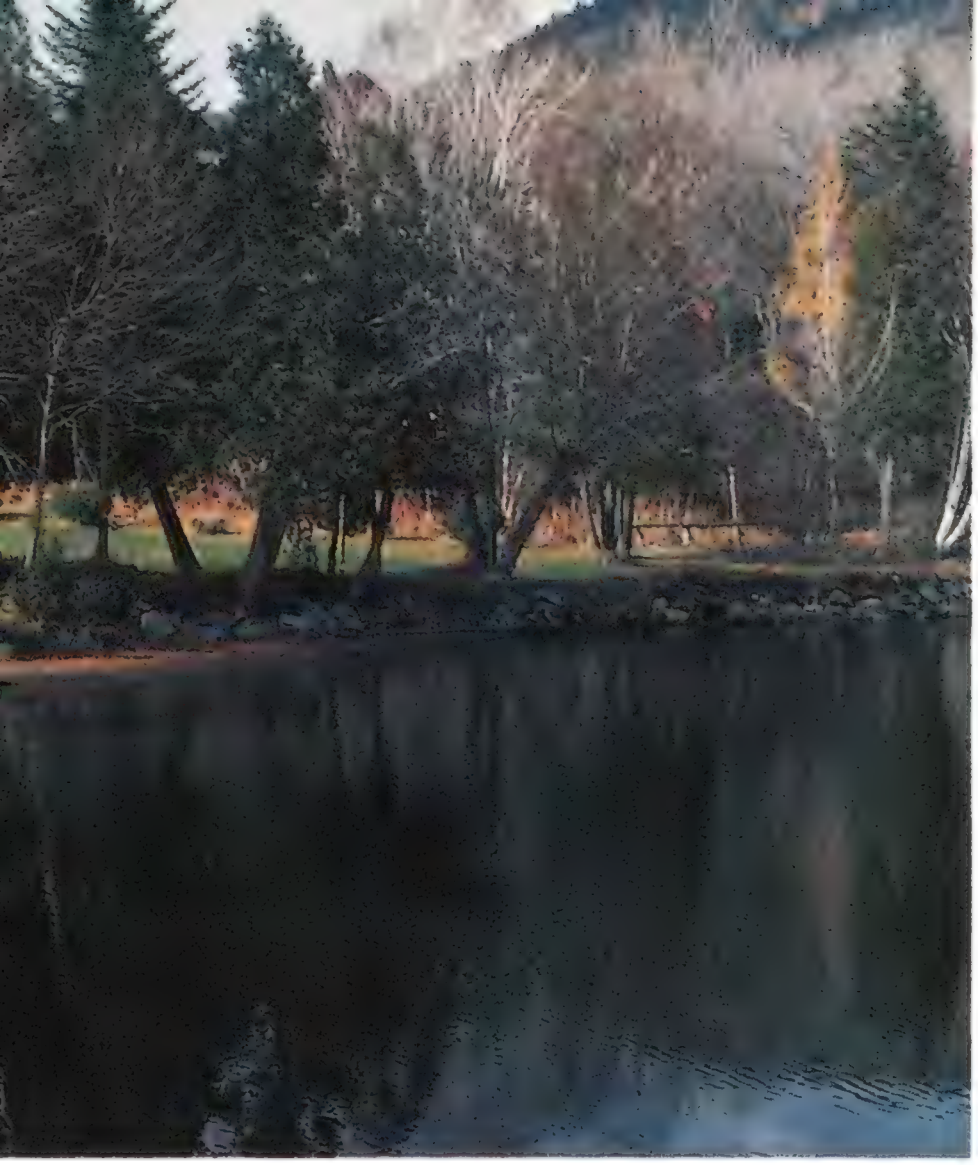
The Olympics promise much at a time when Adirondackers face many problems. The choice between food and fuel becomes real when people can't pay oil bills. Scarcely a house is without stacks of wood on porches or in sheds. "It just means more trouble," says the proprietor of Clark's Beach Motel in Old Forge, over on the western edge of the mountains where the Olympics may or may not boost tourism. "When people burn wood, there are more fires than ever," the woman at Clark's said. "More trouble."

It was snowing hard that October morning when we talked about fires. Already the long winter had begun. This month, if it's an average year, 27 inches of snow will accumulate. A cold spell could hit like last winter's, when temperatures dropped as low as 35 degrees below zero.

In spite of hills and snow, winter tourism in the Adirondacks has not been fully exploited, a failing the Olympics may correct, especially if Lake Placid is granted funding as the permanent Olympic training center of the East.

"We've simply got to get that center," George Valle, a figure-skating coach in Lake Placid, said just before stepping onto the ice in the new Olympic arena to begin a lesson with two Canadian teen-age pair skaters.

Jane Eblen Keller until recently lived in upstate New York. She has written a book, Adirondack Wilderness, *which will be published this month.*



built between 1880 and the First World War, and they remain immensely popular with urban vacationers.

The home of a Park resident displays Adirondack architecture and the ubiquitous supply of firewood.

Valle and his slim Viennese wife, Helga, have been world-competition skaters, stars in the Ice Capades, and for the last seven years part of a kind of Adirondack subculture. Their world includes Gustave Lussi, the 81-year-old figure-skating coach who trained Dick Button and Dorothy Hamill, among others, and who still works with students every day during the summer at the Lake Placid arena. It also includes McKellen's Pine Lodge, where the parents of the American champion Gordon McKellen set up a boarding house for the dozens of young, talented skaters who leave their families, friends and normal lives, risk injuries, and go through thousands of their parents' dollars a year to skate eight to ten hours a day and train with one of several Lake Placid coaches.

Some of these youngsters may be Olympic material, and the great Adirondack hope is that more top talent will come to Lake Placid to train, drawing tourists and creating jobs.

What is a great hope to some, however, is a great fear to others. The two new Olympic ski jumps, for example—towers 90 and 70 meters high and visible from miles away—are visual pollution to people like Richard Beamish, an environmentalist and former college administrator who was on the original APA staff. "And the prison site," he says of the new Olympic Village where the athletes will stay and which will become a federal prison after the Games, "is a disaster." Beamish thinks one sign of what he sees as a weakening APA was the agency's low profile prior to construction of the prison site and the water runoff problems which resulted near the place. What some see as a healthy moderation at the APA, Beamish fears may be a cave-in to local protests. "There's nowhere nearly enough protection of lakefronts, for instance, and only one person to follow through on enforcement."

Beamish left the agency two years ago and retreated for a time to an isolated cabin on a small lake about 20 miles from Lake Placid. It's the sort of place for which the Adirondacks have been famous for 100 years. The woods are dense and dark. White pines, hemlocks and an occasional beech line the edge of the lake. Boulders bigger than the cabin protrude from the earth, reminders of the last ice age that scoured these billion-year-old mountains. The lake is as clear as rainwater.

"I came to the Adirondacks," Beamish says, "because it's the only place I know that hasn't been degraded. It's such a relief to know a place like this is still left."

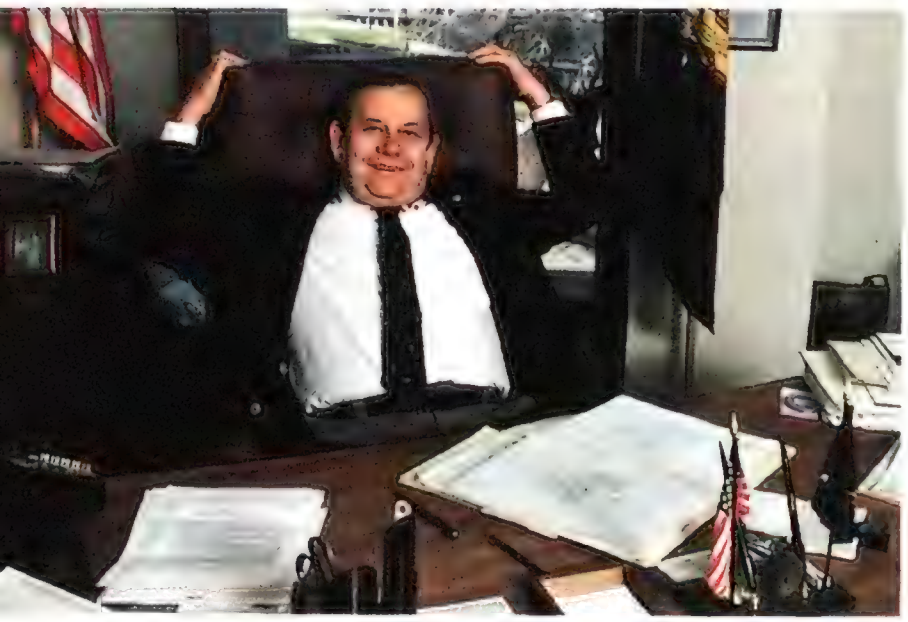
"But there are so many dangers," worries Gary Randorf. His Adirondack Council has brought suit against the state, for instance, because ski trails have been widened in the forest preserve on Whiteface Mountain far in excess of the 80 feet allowed by the constitution.

"Look," Randorf interrupted himself. "There's a winter wren!" We were walking through the woods behind the council's headquarters, the handsome brick mansion where Augustus Hand, cousin of the noted jurist Learned Hand, once lived. Even here, in Eliza-

Seeking middle ground in the Adirondacks

bethtown, a sizable town by Adirondack standards, the wilderness is pervasive. It's in everyone's backyard. Two minutes out of the Hand mansion and you are away from it all. The tiny wren, rarely seen so late in the year so far north, is no bigger than an infant's hand. I would never have seen it, but Randorf's trained naturalist's ear caught the rustle it made in a pile of leaves. Beyond, the Bouquet River flowed so quietly it, too, was almost invisible. But like most Adirondack rivers, the Bouquet has its origin as a rushing mountain stream, thrilling for white-water canoe enthusiasts but useless for transportation.

The lack of good navigation was one thing that kept pioneers out of the Adirondacks, leaving the mountains almost untouched until the middle of the 19th century, when loggers went in and sent millions of logs out, down the swollen streams and rivers in spring.



State assemblyman Glenn Harris has fought the Adirondack Park Agency since its 1971 inception.

Roger Tubby, the governor's special representative, wants to save the mountains—and create new jobs.

Clear-cutting of the forests was the first environmental crisis up here, threatening to destroy what by the 1880s had become the focus of some of the earliest major conservation efforts in the country.

The big push in 1885 to have state land protected as a forest preserve was an important precedent in the then-new American conservation ethic. Hardly a great name in the movement has not been linked with the Adirondacks. George Perkins Marsh, whose book *Man and Nature* (1864) has been called the fountainhead of conservation, devoted a long section to the importance of the virgin Adirondack forest as protector of much of the East's water supply. John Burroughs, the literary chronicler of nature appreciation, began his first book, *Wake-Robin,* after a bird-watching trip to the Adirondacks in 1863. Robert Marshall, a founder of the Wilderness Society, learned his love of nature as a child at his family's place in the Adirondack Mountains.

An architectural style for mountain retreats all over America was set in the Adirondacks by the wealthy

Outdoorsman Gary Randorf is head of the Adirondack Council, opposed to much development in the area.

families who built "camps," as even the most elaborate lodges have always been called. Whitneys, Vanderbilts, Lewisohns and J. P. Morgan all had rustic, isolated estates, featuring the now valuable furniture made from raw logs, giant stone fireplaces, and an architecture meant to blend with the forest so closely as to seem part of it.

Hotels and inns gave others a chance to get back to nature. During the so-called Gilded Age of the Adirondacks, between 1880 and the First World War, hundreds of hotels were built. Some were extravagant "wonders of the wilderness" like Prospect House on a remote hill overlooking Blue Mountain Lake, offering French chefs and electricity. Others like Paul Smith's Inn on Lower St. Regis Lake were fashionable because of their rusticity. People went to Paul Smith's for the hunting and fishing, for the wit and wisdom of Paul Smith, a mountain guide who knew the Adirondacks as well as any person since, and for what made the Adirondacks different: the raw wilderness.

Then there was the air. That was what the young, sickly Teddy Roosevelt and many others went to the Adirondacks for. The evergreen-scented mountain air was thought to be healthy, especially for those afflicted by the most dread disease of the 19th century, tuberculosis. People who know nothing else about the Adirondacks and Saranac Lake, its biggest town, know about the "cure," and probably about the Trudeau Sanatorium, the most famous of several such hospitals in the mountains. Edward Livingston Trudeau, a New York City physician, founded the sanatorium in 1884 when he himself had partially recovered from TB after a self-prescribed regimen of rest, good food and lots of Adirondack air. "He was sick for 40 years, but it didn't stop him," Dr. Francis Trudeau, his grandson, said, looking at the reclining, blanketed statue of Edward Livingston. It is now on the grounds of the new Trudeau Institute, a respected private biomedical research institute, which replaced the sanatorium.

Francis Trudeau continues the family tradition in Saranac Lake, practicing internal medicine from his grandfather's office, with its fireplace, its oval, carved desk, and the hand-painted wallpaper of forest scenes.

His son Garry broke the family tradition by becom-

Former Park agency staffer Richard Beamish now works in Manhattan, but winters in the mountains.

ing a Pulitzer Prize-winning cartoonist as the creator of *Doonesbury,* but Francis Trudeau is a kind of living link between Adirondack history and the new problems and possibilities of the Park. He practiced alone for 20 years, unable to attract an associate, until suddenly, after 1969, he was swamped by applications from young physicians wanting the intimacy of a small town, and the Adirondack climate and terrain.

The back-to-earth urge brought the environmentalists—and the tourists and developers—all demanding different things of these mountains. While the Adirondacks are special in many ways, the problems of how to protect an environment without making a museum of it and of how to live on, even exploit, the land without destroying it make the Adirondack dilemma of more than local interest.

The Adirondack Park Agency has an impossible job, and new problems confront it. With demand for firewood rising all over the Northeast, the vast forest covering more than 80 percent of the Adirondacks suddenly seems vulnerable again, as it was in the 19th century. Proposals to produce hydroelectric power from Adirondack waters are gaining support.

The new problems and the old require the creative concentration of naturalists, environmentalists, natives, visitors and politicians alike, all of whom share one thing: love for this wild land. People differ about how to treat it, but rarely have I heard so many people speak with such respect for the spot on Earth where they have chosen to live or visit.

" 'Hands across the mountains,' must be the new motto in the Adirondacks," says Roger Tubby, a former press secretary to President Truman, ambassador and newspaper publisher, and a longtime Saranac Lake resident.

His official title as New York Governor Hugh Carey's Representative to the 1980 Olympics and Consultant on the North Country Economy means Tubby has some difficult jobs. As chairman of the Olympic Accommodation Control Corporation, he worked to obtain housing for various groups at reasonable prices. Tubby took some abuse from conservationists in the 1960s when he supported the building of Interstate 87 through the eastern section of the Park, on Forest Preserve land. But he knew the road would bring tourists. It did, and is now one of the most scenic superhighways in the East. "I want to keep my own view of 30 miles of forest and mountains. But I also want to help my neighbors down the road who are as poor as people can be," he says.

He has worked for nearly five years to bring passenger rail service back to the Adirondacks, foreseeing the gasoline shortage that could ruin tourism in this region where you must have a car to get anywhere. In early October, the Adirondack railroad from Utica to Lake Placid made its first passenger trip in 15 years over road originally laid in 1893. A few places along the way the passengers held their breath as the tracks led across gorges and along the steep edges of rocky mountains. But the train made it, stopping for cheering groups at the small stations along the way. In the 19th century, Adirondack vacationers endured a two-day journey by rail, boat, buckboard and sometimes horse to get to one of the wilderness hotels. Some people think a return to some of these old ways might not be a bad thing at all.

People like Roger Tubby—compassionate, willing to take a stand at the middle of extreme positions—promise that the Adirondacks can be an example for other parts of the country. If imperfect, the APA has proved itself flexible enough to gain permanency in the Adirondacks. The Olympics have brought, on balance, more hopeful good cheer than divisiveness and have boosted the self-confidence of many residents who worked passionately to get the 1980 Winter Games.

The Adirondacks are not the place either for unbending, no-growth environmentalists or for developers of the more rapacious sort. If the middle way for this magnificent wilderness in the midst of the urban Northeast still leans to the side of conservationists, more and more people now include economic health in their vision for a better Adirondack Park. As Gary Randorf, the outdoorsman, says, "The economic problems of this region, and perhaps of America, are as important as the ecological ones." The huge, wild Adirondack region is once again worth watching—and not just for the Winter Olympics.

Adirondackers live close to the land and love it. Elvin Bushey, opposite, is content without plumbing.

By Bennett Schiff

An artist's garden blooms again at Monet's Giverny

Surrounded by flowers, the painter's home outside Paris was a source of inspiration; now, house and grounds have been restored

Musée Marmottan

A patriarchal figure, in control of things, Monet poses, with characteristic pride, in his garden.

The painter Claude Monet's dates are 1840 to 1926, and of that long life he spent the last 43 years making a garden at Giverny and painting light as it fell on all that grew there. He left behind, perhaps forever, some paintings which are purely paradisal in the precise sense of that word.

Monet loved that country house and its four acres or so, 50 miles northwest of Paris, as much as any man or woman has ever loved a particular place. As these things go, after his death it was all left to his son Michel. Michel Monet was not much given to Giverny, being more inclined toward big-game hunting in Africa. And so Monet's cherished house and gardens—including the water garden from which came his monumental studies of water lilies, the Japanese footbridge, the willows and wisteria, and that luminously enveloping atmosphere—fell into desuetude, decay and, you might say, despair.

This late spring it will all be back in the condition it was in when Monet lived and painted there—the house, the gardens, the furnishings, the studios, the dinner service, the Japanese prints of which he was an assiduous early collector. It has taken some three years of very difficult and meticulous work and more than $2.5 million, and this is how it came about.

Michel Monet died in 1966 and left the property to the Institut de France, the overall name of the five learned societies that preside over the life of the mind of the country, one of them being the Académie des Beaux-Arts, which was given specific responsibility for it. Michel also left a great legacy of paintings by his father and by many of Monet's illustrious artist friends, all of which are now in the collection of the Musée Marmottan in Paris.

To see Monet, to experience his particular sensibility, the ideal way would be to go to Paris: to the Orangerie where his monumental suite of water lilies (*Décorations des Nymphéas*) is installed, to the nearby Jeu de Paume (both in the Tuileries, overlooking the Place de la Concorde on the right bank) and to the Musée Marmottan up the Seine about two miles in the 16th arrondissement.

And now, with Giverny in its custodial possession, France could even offer the very place in which so many of the artist's greatest works were created. But by 1966 Giverny was a shambles: the house dilapidated, the magnificent gardens a jungle, the water garden in stagnation, the entire place derelict.

The Académie called on Gérald Van der Kemp, a member of the Institut, Inspector General of Museums and Conservator of Versailles. Van der Kemp was offered the additional title of Conservator of the Claude Monet Foundation at Giverny, which he recognized at once to be translatable into a single word: headache. The problem was, as it always is, money.

While the cultural budget of France is extensive, and pride in its artistic patrimony somewhat more de-

Billowy bunches of flowers line the main walkway leading to Monet's house. Rose trellises arch above.

Color photographs by Pierre Boulat

Monet's Japanese footbridge today. He built it in the mid-1890s, soon afterward added the trellis.

veloped than it is in some other highly civilized countries, there are many impassioned claims on it, and Giverny, after all, is a small place.

Van der Kemp accepted the job, he says, out of a sense of duty, knowing well the delicate intricacies of authentic restoration, and the cost of such work, and the various problems of financing. "I was in despair," he recalls. "The ceilings had fallen down, the place was a jungle. We would have to begin with bulldozers. I made it clear that if I couldn't find some money I couldn't do the job. I accepted for a period of one year." That was three years ago and Van der Kemp will still be on the job when, a few months from now, Valéry Giscard d'Estaing, President of France, opens Giverny to the public. It will not be the first time by any means that a leader of the Republic will have been present at this bourgeois country house. Georges Clemenceau was not only there many times, but he was Monet's very close friend and admirer and the go-between for Monet and the government in the difficult negotiations which resulted in the painter's gift to France, some 300 feet of a water-garden landscape which today decorates two elliptic rooms of the Orangerie, a work which may be likened in magnificence to Michelangelo's painting in the Sistine Chapel.

It was Monet's tribute to his country, a testimonial work of the most exhilarating beauty, painted in physical and spiritual anguish in his last years as he was going blind, and not installed until 1927, the year after his death. He had worked on it, beginning at the age of 73, for 13 years, right up until only months before he died. The *Décorations des Nymphéas,* 19 panels, each 6½ feet high and some as wide as 20 feet, were all painted at Giverny. The studio in which he painted them, a cavernous building of 75 by 39 feet and with a skylight ceiling 49 feet high (p. 61), was constructed for the task. It is possible to walk around in it today, having come through those gloriously bunchy gardens surrounding it, all of which is something of an experience after you have been to the Orangerie. Or, even if you have only one Monet flower in mind, which you do, if you have seen any at all.

We are a little bit ahead of our story here and it is time to return to Van der Kemp in search of money. He had come to New York City, to the Versailles Foundation, which is a group of people who raised lots of money for the superb Versailles restoration (SMITHSONIAN, March 1977), thinking they might be interested in the Giverny project. He had been encouraged by the reception there, for he was among friends and he is no mean salesman, and he had gone on, for he is not above a busman's holiday either, to the Metropolitan Museum of Art, a visit which turned out to be continuingly congenial.

There, in the Great Hall of the Met, one of the country's most classically imposing spaces, what stood out immediately for him were live flowers. Remember,

Bennett Schiff, on SMITHSONIAN's *Board of Editors, wrote on arts in Winston-Salem (January 1979) and the American Academy in Rome (March 1978).*

Metropolitan Museum of Art; H. O. Havemeyer Collection

The bridge inspired this painting done in 1899, showing water lilies below, willows in back.

Musée Marmottan

In 1921 on bridge are Monet, granddaughter Lily Butler and Mme Kuroki (a friend).

he was to begin restoring Giverny and Giverny is, above all, flowers. Even so, when you think of it, what could hold its place in the Met's marbled, porticoed, vaulted and domed Great Hall better than flowers? There are five great urns of them, in the center of the main information desk and in four porticoed niches, great clumps of flowers that radiate light and are not at all intimidated by the grandeur of the place.

"I asked," Van der Kemp says, "'Who did that?,' and was told, 'Mrs. Wallace.' I wrote to Mrs. Wallace and said, 'I am also a flower lover and that is why I have been asked to be in charge of the restoration of Giverny.' " She responded, Van der Kemp recalls, " 'If you are the curator of Giverny, I want to know you. I am a great admirer of Claude Monet.' She invited me to lunch. She wanted to know all about it, just what we were trying to do. Then, she said to her legal adviser, 'Give him one million dollars.' We became friends." That gift led the way for others, including additional bequests from Mrs. Wallace, as Giverny began to brighten and bloom once more.

Mrs. Wallace is Lila Acheson Wallace, cofounder with her husband, DeWitt Wallace, of the *Reader's Digest,* and a generous benefactress of the arts in general and the Metropolitan in particular. She had, for example, made it possible for the Metropolitan to renovate its immense facade, the Great Hall and the Egyptian Hall. She had also, in what was one of the most imaginative gifts of all, and not inexpensive, endowed fresh flowers, in perpetuity, for the Great Hall.

It is not surprising that Mrs. Wallace should be an admirer of Monet's work or that, given her resources, the owner of Monets as well. These things have a way of coming together, and in April 1978 the Metropolitan, in honor of Mrs. Wallace and to celebrate the rebirth of the garden, presented *Monet's Years at Giverny: Beyond Impressionism,* the greatest Monet show this country has seen, 81 of his finest works, all painted at or near Giverny in the years he lived there, a celebratory efflorescence of spirit and place.

Monet was 42 when he arrived at Giverny, well enough known by then but not yet the great success he was soon to become, both in reputation and financially. He had, in fact, suffered seriously from a lack of money and was never to forget having to ask friends for help in the Paris days when he couldn't pay his rent and his first son, Jean, was about to be born.

He himself was born in Paris but soon moved with

A second studio building, added by Monet in 1897, also contained a gardeners' room and a photography lab.

From main doorway of the house, framed by interlaced branches of yews, central walk leads to a highway, beyond which are the water gardens. This is the view family had when eating outdoors on the balcony.

his parents to Le Havre, where his father went into the wholesale grocery business. His background was solid French middle class, and it is extraordinary how, in view of this and probably because of it, he, like so many other great French artists of the time, chose an entirely different goal to pursue. The unconventional artist comes about in a conventional way often enough, and Monet exemplified this. He didn't care for school, liked to roam outdoors, spent his time in the classroom caricaturing his teachers. But, seen today, those caricatures from his early youth are not at all the work of a schoolboy. They have a decided authority, an incisive line, a clear declaration of purpose.

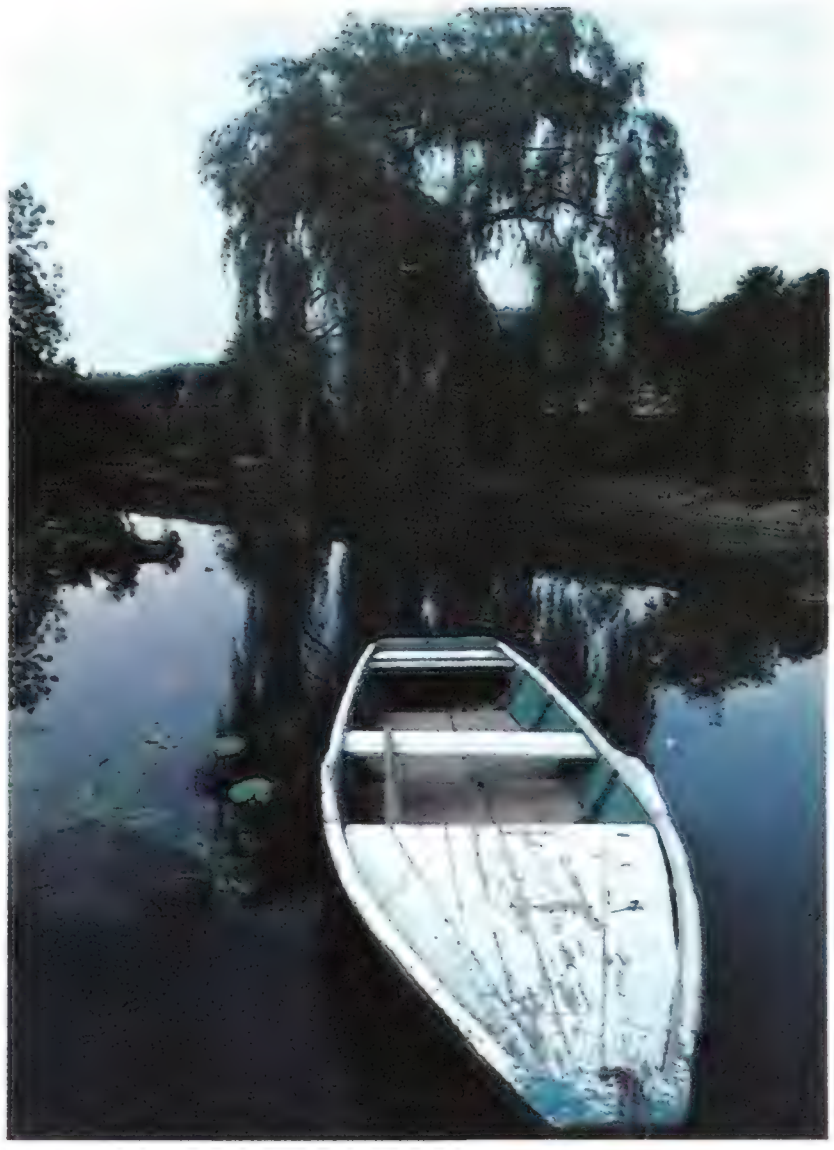
Monet's contemporaries, it is impressive to remember—particularly since he was so highly regarded by them and was in fact a leader among them—were Manet, Pissarro, Degas, Cézanne, Sisley, Renoir, Gauguin, Van Gogh and Toulouse-Lautrec. The next generation brought forth Bonnard, Vuillard, Picasso, Braque, Matisse and Miró.

It was Eugène Boudin, former operator of a frame and stationery shop in Le Havre and painter outdoors at every possible moment of pictures considered masterpieces of their kind today, who befriended Monet when he was about 15. Boudin introduced Monet to painting outdoors along the windy, spacious seacoast of Normandy. For Monet, it was a revelation. "Suddenly a veil was torn away," he later wrote. "I had understood—I had realized what painting could be. By the single example of this painter devoted to his art with such independence, my destiny as a painter opened out to me."

Monet arrived in Paris when he was 19 and soon became acquainted with that great nurturing institution for arts and letters, the French café.

It was Paris that brought him into contact with the painters, poets and writers whose company he cherished for the rest of his life, and it was the atmosphere of Paris that developed his ideas and attitudes which, in time, led to his organizing in 1874 the first Impressionist show, forever a part of the history of Western painting. And it was here, from a critic's derisory attack on Monet's painting *Impression, Sunrise,* that the Impressionists got their name.

He had first submitted to the official Salon in 1865, when two of his works were accepted and praised. By



Boat on water-garden pond today is the same one used by one of the gardeners, assigned to pond full-time.

then, he was already a virtuoso painter. He showed triumphantly again at the Salon in 1866 two paintings, one a brilliant tour-de-force portrait of Camille Doncieux, who was to become his wife and the mother of his two children, Jean and Michel.

Already it was apparent that technically he could paint anything he wanted to—his sense of texture, paint handling and tonal values was impeccable and his brush quick, definite and tactile. And yet the following year his work was rejected by the Salon. These were difficult years for Monet. His refusal to attend the Ecole des Beaux-Arts and his liaison with Camille Doncieux had estranged him from his family and he was constantly short of money. Stubborn, as always, he frequently slashed dozens of canvases to keep them from the hands of the creditors.

There were occasional sales and patrons. One especially, Ernest Hoschedé, a flamboyant tycoon, was a particular admirer of Monet's work. Monet was invited to Hoschedé's estate, the Château de Rottenbourg at Montgeron, and became a regular guest and a close friend of Hoschedé and of his wife, Alice. In 1877 Hoschedé's financial affairs collapsed. He fled to Belgium, deserting and leaving destitute his pregnant wife and five children.

The following year the Monets and Alice Hoschedé and her six children managed to take a summer house at Vétheuil. They remained there (with Camille both giving birth and dying in that period) for three years.

Monet was never to return to Paris to live. He had discovered the Seine valley as a place to work, which was for him a place to live, the two being indissoluble. But life was not all easy. Monet came to the point where he would barter a canvas for shoes. He would leave paintings as deposits against essential trade. There was in the household one dress of sufficient elegance to be worn on an occasional trip to Paris. Alice and Camille shared it. When Camille died, shortly after Michel's birth, it was Alice Hoschedé who helped a despondent Monet to continue.

Now, with eight children between them, Monet and Alice moved to another house at Poissy, which Monet detested. He made a number of exploratory journeys by train along the Epte, a tributary of the Seine, and returned one day, at last, to say he had found what he wanted in the village of Giverny. There was some

French tiles, copper pots and a marvel of a stove brighten a kitchen noted for the quality of its food.

The dining room, pretty and delicate as French pastry, contains some of Monet's cherished Japanese prints.

money, for the great Paris art dealer Paul Durand-Ruel had taken Monet on.

Monet rented the property at Giverny in 1883 and seven years later was able to buy it, a straightforward two-story rectangular house, softened by a pink stucco exterior and apple green shutters, standing gently beneath a long ridge. Giverny. Monet was home.

He settled in right here with a kind of bourgeois ferocity, the opposite side of, but just as inflexible as, his artistic tenacity. If he was a model of an intransigent French artist, he was at the same time a model of the master of the house, a strong and loving father to all of the children, a devoted mate (they were to marry later) to Alice Hoschedé.

You could say of Monet at Giverny that he brought up a family, he painted and he gardened. Fame came to him here and many shows and many sales and a great deal of money. He bought the property across the road, where he enlarged a small pond to make his water garden. Eventually he employed six gardeners.

In 1924, aged 84, two years before his death, Monet said: "I perhaps owe having become a painter to flowers." He told a visitor to Giverny: "My garden is a slow work, pursued with love and I do not deny that I am proud of it. Forty years ago, when I established myself here, there was nothing but a farmhouse and a poor orchard. . . . I bought the house and little by little I enlarged and organized it. . . . I dug, planted, weeded myself; in the evenings the children watered."

Musée Marmottan

June 1921: Mme Kuroki, Monet, Lily Butler, Blanche Hoschedé-Monet, statesman Georges Clemenceau.

Cultivating the country

In spite of his distaste for big-city life, Monet was a cultivated man with a cosmopolitan outlook. It was usually from Paris that many of his friends—writers and artists, poets and composers—came to visit at Giverny where the food was good, the wine well chosen and plentiful, and the conversation as relaxed as the atmosphere. His guests included Clemenceau, Rodin, the writer Octave Mirbeau, Durand-Ruel, the actor Sacha Guitry, John Singer Sargent, Alfred Sisley, Pissarro, Renoir and Cézanne.

There was a certain form to being invited to Giverny. You would eat the good lunch, stroll through the garden, visit the hothouse and studios, see Monet's work. After the studios Monet would take his friends through the house, where they might see a Toulouse-Lautrec poster of Yvette Guilbert, Cézanne's *Negro,* a Corot, four Jongkinds, three Delacroix, a Fantin-Latour, a Degas, Pissarros, a Signac, a Vuillard, 12 more Cézannes, nine Renoirs, five Morisots and two Rodin bronzes. He was not a jealous artist. He gave credit and admiration where it was due, and there were many to admire in those days.

It was in this house that he became the Monet we see in the books: a sturdy barrel-chested man with a great prow of a nose riding an ocean of beard, his eyes ablaze. He stands, a monument of a man, in his studio, or in his garden, at Giverny.

Of gardens there is much that has been said and, after that of Eden and its definitive description ("And the Lord God planted a garden eastward in Eden. . . ."), probably the best words of all are those of Sir Francis Bacon, who put it this way:

"God Almighty first planted a garden; and, indeed, it is the purest of human pleasures; it is the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handyworks. . . ."

Well, Giverny is like that. The main walk leading up to the house from the road, about ten feet wide, is arched over by a series of rose trellises and you are surrounded by flowers in profusion and in glory. Coming up the walk (p. 52) there are, in early autumn, trailing nasturtiums in colors from yellow to orange to orange-red; sunflowers; Michaelmas daisies; snapdragons; geraniums, asters; fuchsias; dahlias; zinnias; poppies, hollyhocks; impatiens. There is a way of feeling here that it is raining flowers. To walk through the garden is to be in a painting. There are places where one pink rose rises against a burst of lavender Michaelmas daisies. There are little beds of flowers, flocks of flowers, bombardments of flowers, then, a single one.

Across the road is the water garden: the lily pond, the Japanese footbridge, willows, azaleas, rhododendron, bamboo, poppies, ornamental shrubs. There is a walk which gently curves around about two acres here and it is all quiet.

Everything is as close to the way it was when Monet

lived there as research and dedication can make it. There have been some problems. An underpass today leads from the house to the water garden, traffic on the road being more frequent and faster than it used to be. And there is a problem with growing water lilies the way Monet had done. "Muskrats," Van der Kemp explained, "are eating the bulbs." And why, you might wish to know, are the muskrats eating the bulbs today and not before, as they obviously did not if you look at the paintings and the photographs? Because, in a way, the water lilies became casualties of the fashion industry.

In the early decades of this century breeders imported muskrats from the United States, a business which soon petered out, but not the muskrats. A number escaped or were freed, and these days entire regions of northern Europe are infested with the little water-lily-bulb eaters. The Giverny pond is now lined with metal along its banks and water-lily bulbs are each surrounded with tiny enclosures of wire mesh, altogether a costly and complicated project by itself. There are some water-lily pads to be seen, but Van der Kemp points out that it takes a couple of years to achieve a sizable pad and it is hoped that a year or two from now things will be better.

The house and the three studios—one in the house itself, another in an annex Monet had built and the special one for the *Nymphéas* series—are all in fine condition. Walls in the house have been painted the identical colors they used to be, the panels picked out in contrasting colors in the pleasing French style of the period. The kitchen has its original French tiles and is hung with rows of copper pans and pots. Monet's collection of Japanese prints is seen everywhere, cleaned and restored by the Bibliothèque Nationale and identified by a curator at London's Victoria and Albert Museum. A factory in Limoges is duplicating the original dinner service; the factory that made the original one no longer exists.

Just out the window, out every window, is the garden. There is a certain moment in the late afternoon, if you have been there on a cloudy day, when a pale sun emerges in the last hours of daylight—it would be an autumnal 5 o'clock—when the air itself seems colored by the light of the flowers; when the violet of the tall bunches of Michaelmas daisies seems to seep into the very air itself. And so with the burning reds of the dahlias and the sunburst yellow of the high stands of golden daisies.

At such a moment you can comprehend just what it is that makes an artist noble and why what he has created increases the sense of being alive so indelibly. Monet seems to have discovered that, despite the complexities of metaphysics and the convention of popular slogans, there are cases when appearance *is* reality; that things can be just what they look like if you know what you are looking at and can convey it. That is one of the things that art, when it is transformed by genius, can do.

Monet died in the month of December, in the heart of winter, a time when the garden was mostly at rest and there were no flowers to sustain him any longer.

He is buried in the churchyard at Giverny, a very small place, pure France.

Musée Marmottan

Monet prepares to work on still another panel for his gift to France, the great Orangerie series.

In this studio, built for the job, Monet spent his last years painting the *Décorations des Nymphéas.*

Sunrise warms the 55-acre main plaza at Monte Albán, as seen from North Platform. Archaeologists have

By John E. Pfeiffer

The mysterious rise and decline of Monte Albán

In Mexico anthropologists try to trace story of a city and a civilization that blossomed before Columbus, then inexplicably withered

dug here for decades, but many buildings still appear as jungle-clad mounds like those in the background.

Some 2,500 years ago when Greeks were busy fighting Persians at places like Thermopylae and Marathon, Zapotec Indians across the Atlantic began building a great city, possibly the first in the New World. The job called for reshaping Monte Albán, a 1,500-foot hill overlooking the Valley of Oaxaca in central Mexico. Cutting into the hillsides, workers constructed hundreds of terraces, stepped platforms with retaining walls designed mainly for plain and fancy residences. For the seats of the mighty, the palaces and temples and major administrative centers, they leveled the entire hilltop, creating the main plaza on a 55-acre superterrace perhaps eight times bigger than St. Peter's Square at the Vatican.

Monte Albán endured for more than a millennium. It housed 20,000 to 30,000 persons at its height, and lost its position as regional capital some seven to eight centuries before the arrival of invaders from imperial Spain. But the setting, one of the most magnificent in the ancient world, remains, together with the glamour.

Photographs by Michael Freeman

The rise and fall of Monte Albán

"Steps" of the ball court originally were plastered over to form smooth ramps. Players would bounce

I remember my first visit to the main plaza, climbing stairs to a platform where a palace had once stood and feeling as if I were on the edge of an island in the sky, among gray-black storm clouds, the valley floor far below and mountains on all sides. It was an appropriate place for people in power. Today the center is probably more bustling than it was in its prime, with a rather different cast of characters: tourists by the busload, souvenir vendors, armed soldiers on 24-hour duty to discourage looting.

The city attracts archaeologists as well as tourists. It has been one of the world's most intensively studied sites ever since Mexican investigators spent 18 seasons digging there, starting in the early 1930s. The latest research project, launched seven years ago and still under way, is headed by 33-year-old Richard Blanton of Purdue University. He and his associates have been engaged in a kind of Operation Mountain Goat, tramping up and down the hill's steep slopes, searching for artifacts directly underfoot and at the same time on the lookout in the middle distance for traces of ancient roadways, dams, reservoirs and especially terraces. Keeping one's balance under such conditions is not always easy. In fact, falls are part of the day's work and Blanton, a former National Collegiate Athletic Association gymnast, has had his share. Another daily hazard, frequently encountered during falls, is *mala mujer,* or "bad woman," common name for a nettlelike plant that produces stings and aches.

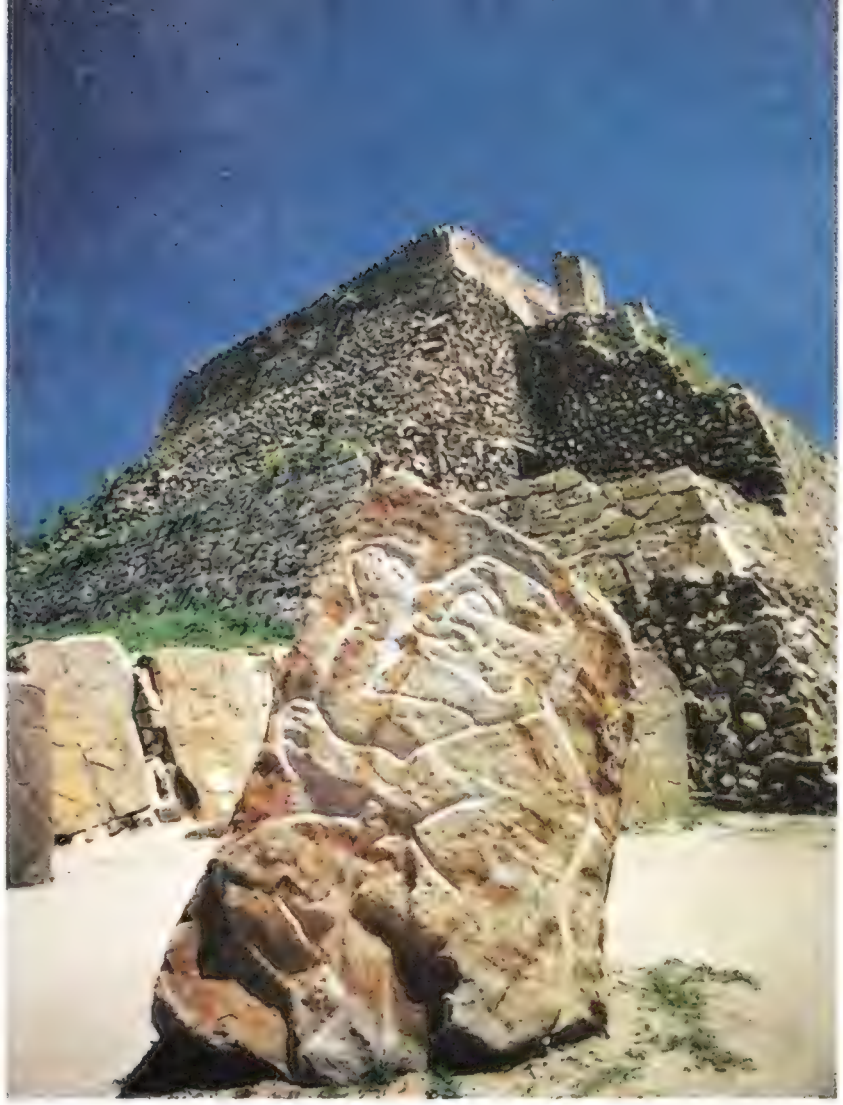
One objective of Blanton's research is to trace the "trajectory" of the city, to put together the equivalent of a time-lapse film of its rise and fall, and for that the terraces provide vital information. Shards, shattered bits of cooking and serving ware, are documents of a sort from which, among other things, rough dates may be read. A dish with characteristic "comb" designs scratched on the bottom is typical of what people were using between 300 and 200 B.C., while a popular item from A.D. 200 to 450 was a flared-rim bowl with snake-like carving. Populations for different periods can be estimated from the number and size of houses.

To date the investigators have identified nearly 2,100 terraces, collected about 120,000 shards and thousands of stone tools, produced 30,000 pages of maps and filled out forms specifying exactly what was found where—all of which makes up only part of the record. Monte Albán was the result of remote as well as local forces. Its unfolding story involves findings at hundreds of other sites located in continuous surveys throughout the immediate region and beyond. In some way which eludes us still, its rise was connected with the rise of other early Mesoamerican centers, its fall with their fall, including the mysterious and relatively sudden collapse of Maya civilization. Furthermore, what we are learning from developments in the Valley of Oaxaca raises questions which apply to the emergence of cities and states everywhere, and in our own times as well as in times past.

The Valley of Oaxaca's first migrants from a nearby valley—perhaps 50 persons—arrived some 10,000 to 15,000 years ago. They were nomads, taking nature

John Pfeiffer, whose books include The Emergence of Society *and* The Emergence of Man, *is writing one now on the sudden appearance of modern man.*

a rubber ball off the ramps and each other, trying to hit it into niches in corners. Game was for elite.



Carving of a slain enemy is from long-vanished building; others were used as part of wall at rear.

pretty much as they found it, living on what the good earth offered, wild plants and wild animals. When local resources became scarce, they moved to another part of the valley, rarely camping in one spot more than a month or so. This was the ancestral way of the hunter-gatherer, dating back at least two million years to the earliest members of the genus *Homo*.

Their descendants—and those of other highland people in Mesoamerica—began tinkering with nature. Instead of relying solely on what happened to be growing wild, they altered bits of the Oaxaca landscape. They proceeded to clear selected plots, plant seeds and experiment with garden produce, which merely supplemented conventional wild diets at first, and later became increasingly important. The process culminated in a heavy dependence on a variety of cultivated species including corn, beans, squash, avocados and chili peppers, and in the end of nomadic hunting-gathering as a dominant life-style. Villages appeared around 1600 B.C., settlements of one-room houses with walls of lashed-together reeds or cane plastered with clay and mud.

Stephen Kowalewski of the University of Georgia estimates that no more than 500 people may have been living in the valley at the time of the first villages, around 1500 B.C. The number had increased fourfold by 500 B.C. when Monte Albán was founded. The city's population, like a rocket taking off, shot up to 5,000 within its first two centuries and, by around 200 B.C., had tripled.

Perched high and near the point where the three arms of the Y-shaped valley come together, Monte Albán would have made a fine fortress, but the founders built no fortifications. The site was not convenient to good farming land, raw materials or water, and hauling supplies up the hillsides meant backbreaking labor in a country where the only draft animals were human beings. "We really don't know why Monte Albán was built when it was, or why at all," Blanton explains, "but it may have been the creation of local chiefs." These leaders may deliberately have located it in an undesirable place in neutral territory—as was Brasilia on its remote Amazonian plateau or, in earlier times, Washington, D.C., in what was originally a malarial swamp area which no one wanted. It may be significant that in the beginning the center consisted of three separate districts or zones, perhaps the political bailiwicks of leaders from the valley's three arms.

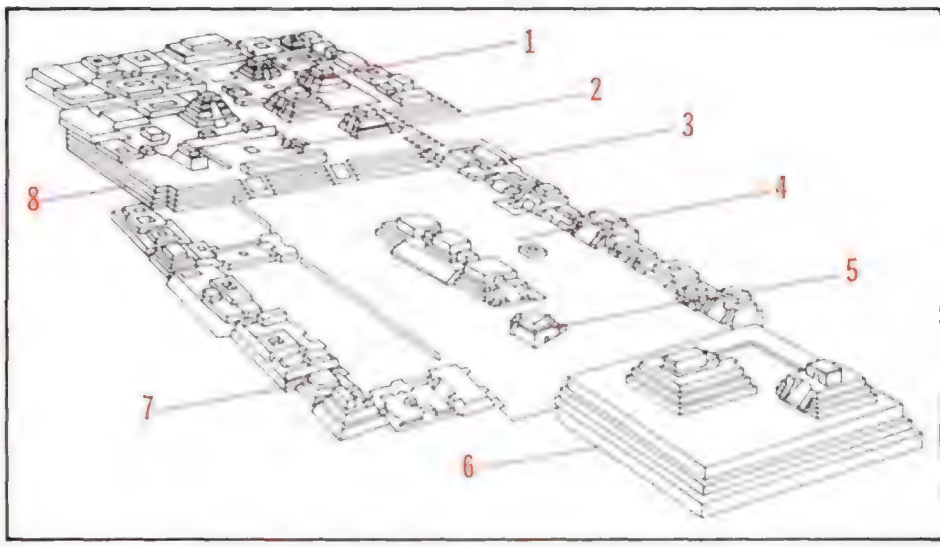
Further clues to what was going on come from Monte Albán's great open terrace, the main hilltop plaza. One of its earliest buildings contained a series of figures carved in low relief on stone slabs, depicted in stylized positions with eyes closed and open mouth, and once believed to be *danzantes* or dancers engaged in some sort of ecstatic ritual. More recent studies suggest that they were dead rather than entranced—slain

Continued on page 68

A portrait of a great city at the peak of its power

A close approximation of Monte Albán at its height in A.D. 600 is depicted in this painting by Lloyd K. Townsend. The view is toward the northeast: the South Platform (6) is at lower right. The royal compound (1) is believed to be where the supreme rulers lived and conducted their affairs; the building on the east side of the compound, through which the identification line (1) runs, was the innermost sanctum of all. The entire North Platform (8) was generally the center of government activity. Visitors approached up the stairs from the central plaza (4) and then across the sunken court (2) to ensure they were properly awed before meeting their rulers. Building J (5) on the central plaza remains a mystery. Aimed like an arrowhead to the southwest, it may have been an astronomical observatory. The ball court (3) was strictly for the upper crust. The location of the Danzantes building, which belonged to the city's earliest period and was already gone when Monte Albán reached its zenith, is indicated at (7).

All around the Grand Plaza, built on innumerable terraces, are the homes of the rest of the population; apparently status was signaled by proximity to the plaza. Buildings around the southwest part of the plaza (foreground) seem to have been workshops that supplied the rulers. The two large buildings on the higher level at the right side of the picture, slightly above center, are believed to have been elite residences. The long open area to their left may have been one of the dozen or so small markets that served the city's residents. Many of the buildings in this painting have yet to be excavated, and many are imaginary but typical. The two buildings shown here on the South Platform, for example, are in reality the two vegetation-covered humps at the end of the plaza in the opening picture. No one yet knows what they were for.



The headdress marks this figure on a burial urn over a tomb as the deity Cocijo, the rain god.

or sacrificed captives. We might learn more about the killing if experts learn to translate hieroglyphs found at one end of the "Gallery of Danzantes," the oldest known written texts in the New World.

Monte Albán served as the base of a military league or confederation, not a tightly centralized government but a union by consent and for expediency's sake. Populations were on the rise not just in the Valley of Oaxaca, but also in many smaller valleys within a radius of 50 miles or so, where competing peoples represented a threat—and, if subjugated, a rich source of tribute in the form of cotton, tropical fruits and other valuable products.

The region suffered growing pains with the population, some 10,000 to 20,000 persons in 300 B.C., soaring to more than 40,000 by 200 B.C. Farmers under pressure to work the land more intensively, to produce more food for city folk, acquired extra hands by producing more children.

Fortifications begin to appear

A new feature shows up in the archaeological record at Monte Albán, whose own population had tripled. You can see part of it from the top of the hill. About halfway down the west slope, just beyond a plowed field, lies a great ridge marked by a row of trees. The ridge goes on and on, an ancient semicircular defense, a double earthen wall more than a mile long, 10 to 30 feet high, and up to 60 feet thick. Furthermore, in an apparent effort to become more self-sufficient, people built behind the walls what may have been reservoirs, with a network of irrigation canals at the base of the mountain. Unguarded since its founding, Monte Albán was no longer an open city.

Its conquests are commemorated on the main plaza, in a building which, for reasons unknown, is shaped like an arrowhead and points southwest. Set into its walls are more than 40 stone slabs listing subjugated places. A typical slab includes a "hill" sign, with a glyph above it specifying a conquered place and below it an upside-down head with closed eye, evidently a visual pun representing an overturned chief. In time this structure, known as Building J, was converted to other uses but archaeologists do not agree on its function. It may have been an observatory.

Political patterns, reflected in living patterns, were changing in the valley's central region, the countryside immediately surrounding Monte Albán. After about 200 B.C., what had been flourishing agricultural development within a radius of ten miles of the city, collapsed. In the region as a whole many sites were abandoned as the people clustered together in the larger communities.

Danger put new life into the Oaxaca military league,

Some kids gave us a lesson in business we won't soon forget.

They studied. We learned. They talked. And we listened in admiration. They are students in a competition that challenged them to look hard at our system of enterprise. A competition begun by Distributive Education Clubs of America.

Sponsored by us. But brought to life by teenagers who turned facts into new thoughts. No pat answers for them. Rather, bright, original perceptions of our system. Of how it works. And how it might work better. Phillips Petroleum salutes their effort. And thanks them for their reminder: if you ever begin to make a cow sacred, that cow is ready to be put out to pasture. DECA

PHILLIPS 66

starting about A.D. 200 to 300. The threat probably arose some 225 miles to the northwest on a high plain not far from the present site of Mexico City, where at about that time the supercenter of Teotihuacán was just entering its heyday period, with more than 50,000 inhabitants and dreams of conquest. It was doing business of some sort with Monte Albán, as indicated by the first traces of Teotihuacán-type pottery on the hill, and by the establishment of a Oaxaca district in Teotihuacán. Blanton speculates that "the rich Valley of Oaxaca would have been a prime target for those in Teotihuacán who were directing the expansion of their own empire."

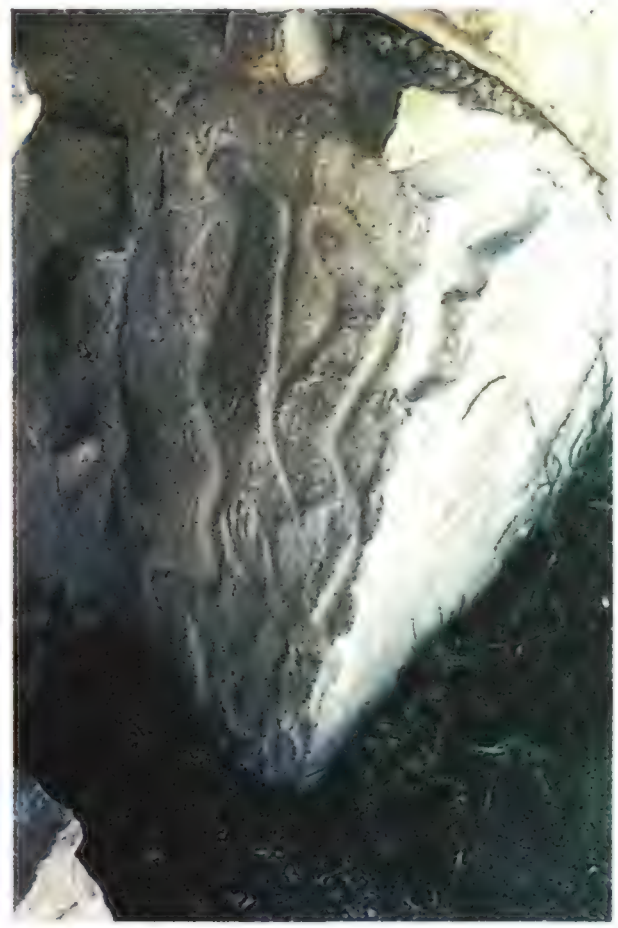
Whatever the Teotihuacános' intentions, the Zapotecs were never conquered. They created a state of their own with Monte Albán as capital, and a centralized government which seems to be reflected in their sculptures and relief carvings. In a study of some 200 monuments, Joyce Marcus of the University of Michigan reports a wide range of styles during the period from 200 B.C. to A.D. 200, with carvings from different valley-floor localities differing markedly from one another and from those produced by craftsmen on the hill. After that period, however, "all regional styles were abandoned . . . and those sites that continued to carve monuments did so in the Monte Albán style."

Monte Albán reached its peak around A.D. 500 to 600, when it emerged as a supercenter, an unprecedented focus of power. The entire valley of Oaxaca, some 700 square miles, contained in excess of 60,000 persons—and perhaps as many as 30,000 were living on less than three square miles of hillside. The city represented something completely new in the New World, a high-rise complex of slopes and levels, terraces above and overlooking terraces, some no larger than backyard gardens, others bigger than football fields, and all 2,100 of them occupied.

Had you lived in Monte Albán then, unless you happened to be important enough to be borne high above the crowd on a litter, most of your life would have been spent climbing. Traffic was heavy, and it was all foot traffic. Mesoamerica had no beasts of burden except human beings, and no wheeled transport. Rising at sunrise from beds of woven matting, brown-skinned workers, housed in small mud-brick dwellings, on many terraces, began moving in gangs along a maze of alleys, winding paths and main streets, carrying water in jugs, food and other supplies for their better-off brethren nearer the top of the mountain.

The way led up, always up, and on to higher and wider terraces with bigger and brighter residences, rooms and hallways on flat-topped pyramids, arranged in clusters around central patios—and painted in red and blue patterns against backgrounds of dazzling white burnished plaster. Workers trudged up steps on the steep sides of the pyramids, unloaded their bur-

Figures at left and right represent slain enemies; one at right has been incorporated into mysterious



Building J on plaza. The stele in center has hieroglyphs that no one has been able to translate.

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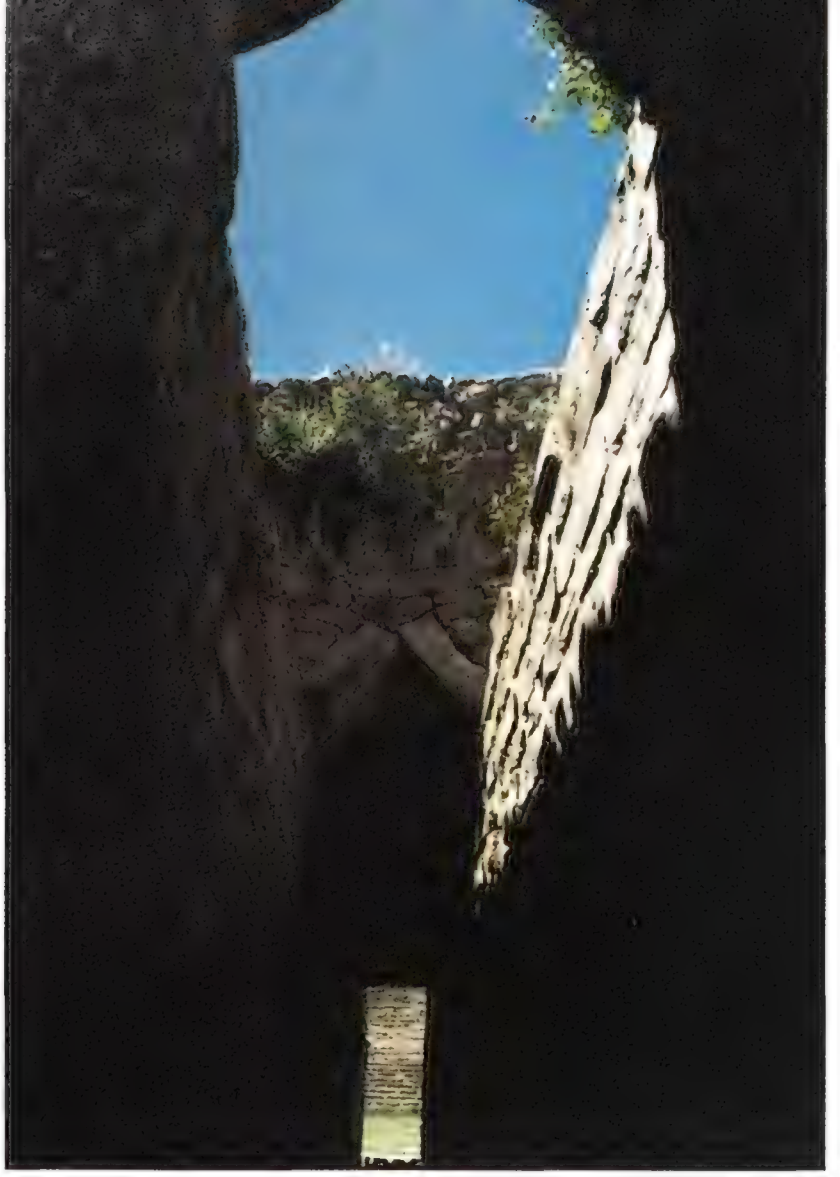


An interior passageway in Building J, now open to the sky, shows details of construction.

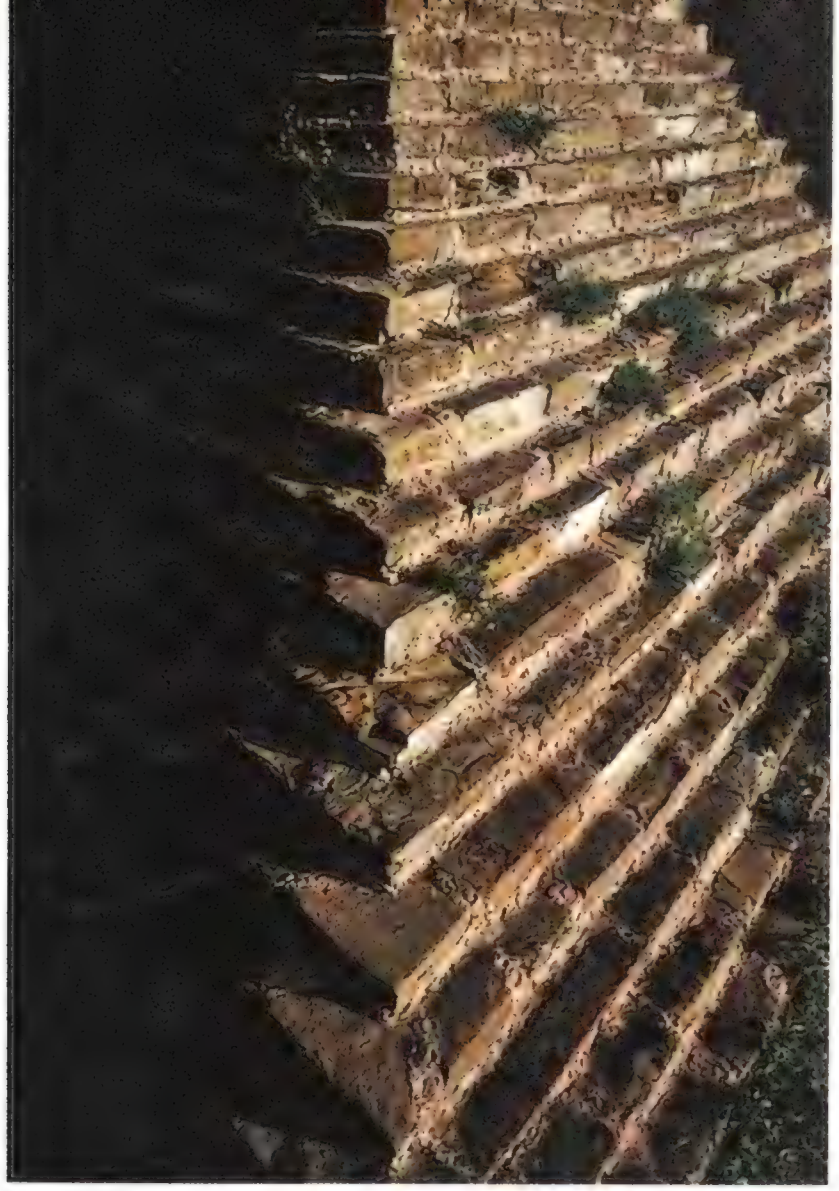
dens, and collected loads of garbage and assorted debris from the activities of the previous day. Scattered throughout Monte Albán were the palaces of the ruling class, as well as markets providing everything from fruits gathered in lowland tropical forests in the southeast, obsidian for tools and ornaments, and colorful fabrics to the perennial tortillas and tamales and fried beans. The main plaza complex atop the hill contrasted sharply with the hubbub of the rest of the city. This was a zone apart, a secret and silent place, strictly off limits except perhaps on a few festival days when the haulers and carriers and their straw bosses were allowed in to celebrate the splendor and to be awed. Only the most elite of the elite, perhaps some 200 to 300 individuals, conducted the affairs of state here in the main complex.

At this time the city was divided into districts, as it had been a millennium ago at its founding, only now instead of three there were 14 (not counting the main plaza). Blanton discovered that all the districts were organized along similar lines, each consisting of numerous residential terraces surrounding one or two groups of mounds at least a meter high and often considerably higher, with platforms on top and facing a common patio or plaza, probably residences for the well-born and their retinues, plus an "open" mound or pair of mounds, generally with access to a major road, perhaps a civic-ceremonial area combining a ritual space with a marketplace.

It was in the main plaza, at the heart of empire, that eventually decay set in. There was no melodramatic twilight-of-the-gods finale, no vandals breaking down the gates, no sacking. Things began coming apart in little ways. Cracks in a facade, a crumbling bit of pavement, paint peeling off an inconspicuous temple wall —flaws like these failed to be repaired as promptly as usual and a foreman noticed and someone may have paid with his life. But in time it became clear that something more than neglect was involved as the tiny cumulative marks of massive social change mounted too fast for maintenance crews to keep up with.

Decline started during the seventh century A.D. First walls were allowed to fall, then entire buildings. By A.D. 1000, the city's population had dropped to less than a fifth of its peak level and the great plaza was abandoned. Gradually, people moved down from the heights, most of them living on the lower slopes of the hill behind defense walls and near a major crossroads which provided easy access to the valley floor. This strategic location, together with a number of other features such as a small settlement and a public space and pyramids just outside the walls, suggests that the former imperial capital had become now more of a commercially oriented tradesmen's community than a regional capital.

The ruins at the top were not forgotten, however. Big men chose to be buried there among half-legendary ancestors. One tomb which Mexican archaeologists discovered nearly half a century ago made use of a stone vault where an earlier member of the elite had been buried about a millennium before, when the city was on the rise. The ancient tomb was cleaned out and filled with more than 500 treasured items, one of the



More stonework details can be seen in this view of a plaza building. This also would have been plastered.

most spectacular hoards ever unearthed in the New World—including carved deer and jaguar bones, earrings and knives of obsidian, necklaces each containing hundreds of gold and pearl and turquoise beads, a breastplate and a diadem of gold, a turquoise inlaid skull with perforated shells in the eye sockets.

Some less affluent individuals still revere the ruins. "One day we were mapping a group of mounds near the top of the hill," Blanton recalls, "and came across a recently dug hole, a kind of niche. Inside was an offering, put there only a few days before: a turkey with its head cut off, and a few cigarettes." The profane, of course, endures along with the sacred. People without respect for times past began looting many centuries ago as soon as the hilltop was deserted, and their descendants have been busy ever since, if no longer in the guarded main plaza, then along the slopes, seeking pottery, artifacts of obsidian and jade, and other salable items.

We know very little about why Monte Albán collapsed or why, for that matter, any other early center collapsed. (Investigators have been concerned chiefly with rising rather than falling political systems, but now, with the recent outbreak of second thoughts about Man's future, more attention is being paid to decline.) Local forces were certainly at work, perhaps within the city itself. In the beginning the main plaza contained only two or three buildings and, although probably never wide open to the public, they may have been readily accessible on special occasions.

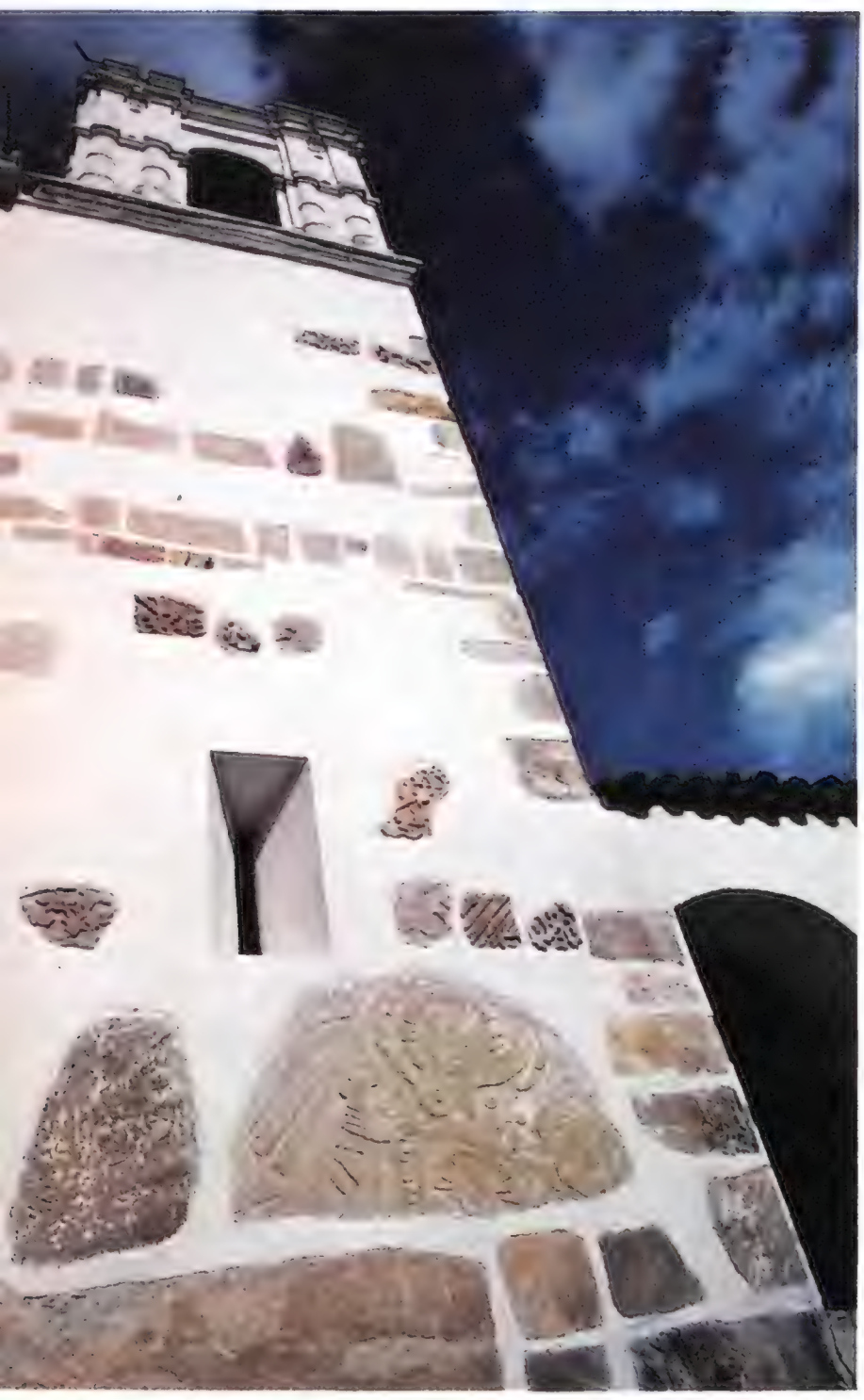
Later it became more and more secluded—staircases facing inward and stark back walls facing the rest of the city. A sign of trouble toward the end was the building of new outer defense walls and a high wall hiding an inner-sanctum zone around South Platform. Blanton describes the plaza as "a segregated closed elite-administrative place, access to which was only by way of three small and easily controlled entrances." The distance between the people and their leaders, and the possibility of restlessness that might flare up in hard times, was on the increase.

Monte Albán was not alone in decline. Its fateful century, the seventh century A.D., also saw the beginning of the end for its mammoth Valley of Mexico counterpart to the northwest. Within a century or so, Teotihuacán declined and many of its temples were burned. It dropped from a population of perhaps 150,000 persons to about a fifth of that figure, and became what one authority calls "a backwater in a highly sophisticated state whose center was elsewhere." Another backwater was in the making more than 450 miles to the east, in the tropical lowlands of Guatemala. Not long after the downfall of Teotihuacán, Tikal, one of the New World's proudest centers, also went under. The prime city of the Maya people, with its estimated 60,000 population and massive defense earthworks and white temple-pyramids rising huge and lonely out of the jungle, ended up as a ghost town, a deserted place of relics.

Centers throughout much of the southern Maya lowlands shared the fate of Tikal, in a gigantic popu-

Richard E. Blanton

Steps of North Platform, as viewed from the plaza. The broken columns once supported a portico roof.



Stones carved long ago in the Valley of Oaxaca were used in modern church at Teotitlán del Valle.

lation decline on a scale unprecedented in the annals of ancient Mesoamerican society. The cause of collapse of this early Maya civilization, which took place within two centuries or so, continues to stir up controversy among investigators. There are many theories. In fact, practically every conceivable possibility has been suggested: malnutrition and food shortages resulting from overpopulation, the spread of insect-borne diseases, warfare among lowland tribes, an uprising of commoners against the upper classes, declining soil fertility, moral decay, and so on. But the solid evidence to support these notions or any others is lacking.

One thing is certain. Decline in the Maya lowlands, as in Monte Albán itself, cannot be accounted for by local forces alone. A complex system had broken down; a network of trade and diplomatic relationships among the elites of supercenters who, on occasion at least, may have had closer ties with one another than with the people of their own states. Expanding research can be expected to help clarify the nature of changes that took place on a Mesoamerica-wide basis of social evolution on a large scale.

The results may have an important bearing on current as well as past events. Today, after little or no growth from the Spanish conquest to the 1940s, the region is again in the throes of a population explosion. In the Valley of Oaxaca, young families are moving into marginal terrain, into the hills, as their ancestors did more than 2,500 years ago. And, once again, there is a premium on more children to help work the land. At the same time, even larger numbers of people are moving into cities.

It may be that Monte Albán has something to say to all of us. Many experts believe that today's restless boom times throughout the world will be followed by another long period of zero growth and population stability. That happened in the past, and it may happen again. Furthermore, such periods have often been marked by a weakening of absolutism, of highly centralized power, like the redistribution of power after Monte Albán's decline.

Similar changes may occur again in the Valley of Oaxaca, perhaps during the next few decades. Even more significant, some foresee an eventual breaking up of today's superpowers. We only know that change is very much in the wind—and that continuing studies of the world's earliest cities, including Monte Albán and its rivals, may help provide deeper insights into some of the global problems that plague us today.

A young entrepreneur offers what he claims are relics of Monte Albán, but they are probably fakes.

By Peter Chew

If fuel is too high down on the farm– just get a horse!

These giant drafters don't run on OPEC oil, they increase in value as they mature, and they are glad to see you in the morning

A pair of gray Percheron mares (they whiten with age) hauls a manure spreader on the Iowa farm

If you love horses, your heart will surely skip a beat when you come face to face with a towering Belgian, Percheron, Clydesdale, Shire or Suffolk. These are draft-horse breeds now making a quiet comeback in the United States because of the soaring cost of tractors and fuel. And if you ever attend a contest like one held last fall at the Waverly Midwest Horse Sale, when a first-rate team of "pulling horses" is hitched to a flat-bed dynamometer truck—their legs trembling, nostrils flaring, necks arched and ears flattened back for the teamster to give them their head—you'll easily envision the great war horses of the Middle Ages from which these animals are descended. Just when you're convinced that the teamster won't be able to hold the rearing, plunging horses in check another split second, he gives them the word and they surge forward (p. 78) into their collars in perfect unison—a furious, hoof-clawing effort that takes them nearly to their knees in the first moments.

The truck-mounted dynamometer—an apparatus that uses oil pressure to "increase" the weight being pulled—has long served to measure precisely the power of draft horses. Last year, a team set a world record during a pulling contest in Hillsdale, Michigan. The animals hydraulically boosted 4,400 pounds of iron castings on the dynamometer truck which they pulled the regulation 27½ feet (the distance a horse needs to reach full power)—the equivalent of starting a 26-ton wagonload on pavement.

Those champions were Belgians. Each of the heavy-horse breeds has its own characteristics, special capabilities, conformation and also zealous adherents, who are banded into separate associations. What the beasts have in common is awesome strength, spectacular beauty and dispositions which earn them the name "gentle giants." They come in small, medium and large sizes but most stand more than 16 hands (a hand is four inches) measured at the point of the withers, and weigh about a ton—nearly twice the weight of a thoroughbred. One of the heaviest draft horses ever recorded, a purebred Belgian stallion named Brooklyn Supreme, stood 19.2 hands and weighed 3,200 pounds (p. 79). He died at age 20 on a farm in Callender, Iowa, more than 30 years ago.

The versatility of these animals matches their

of Maurice Telleen who, with his wife, Jeannine, edits and publishes *The Draft Horse Journal.*

strength. Fashionable "blond" Belgians—tannish in color with white manes, tails and underbellies—haul mowers, hay-loaders and logs on Laurance Rockefeller's dairy farm in Vermont. Gray and jet-black Percherons, which trace their ancestry to France, plod through blizzards with sled loads of hay for cattle on the 200,000-acre Montana ranch of Benny Binion, proprietor of the Horseshoe Casino in Las Vegas. Rancher Tom Harrower jr. of Kemmerer, Wyoming, prefers Clydesdales for the same purpose. These high-stepping Scottish bays with their silky, white-feathered legs and blaze faces never have trouble "starting up" on subzero mornings, which is more than he can always say for his tractors.

Loggers from Maine to Oregon say that while Caterpillar tractors may be able to move three times as many board feet a day as a team of horses, they like to use the animals in certain situations because they don't tear up tree roots or expose young trees to disease by skinning away the bark. Moreover, a single horse or team can get to places too dangerous for a tractor.

Harold Clin

Dick Sparrow drives spectacular 40-horse hitch in Marshalltown, Iowa, in 1976.

In Washington's Yakima Valley apple country, draft-horse teams doze patiently in the traces while their wagons are loaded with ripe fruit. In a vast Kansas stockyard, cowpokes use lightweight (1,600 pounds or thereabouts) draft horses to cut fattened cattle, moving the steers gently so they don't lose valuable weight.

Tobacco farmers in southwest Virginia plow and plant with draft horses, and in Kentucky, Joe Emmons of Sadieville and Dick, his 1,600-pound Belgian drafter, work for the local telephone company pulling cables across ravines in heavily wooded regions in all weather. When Emmons does not find it feasible to lead or drive the horse, the animal does the job alone, responding to Emmons' shouted commands.

Drafters have long proved their value as an advertising medium. Young's brewery in South London has never forsaken its teams of enormous black Shires with their white-feathered legs and Roman noses. They are still more economical than "lorries" for delivering beer to pubs within a three-mile radius of the brewery. A dozen or so English breweries still keep horses and send them forth to fairs accoutered in polished leather and gleaming brass. In Canada, the Carlsberg brewery maintains a traveling eight-horse Belgian hitch.

Photographs by Annie Griffiths

Team of powerful draft horses digs in for horse-pull contest at Waverly Midwest Horse Sale in Iowa.

In the United States, public identification of Clydesdales with Anheuser-Busch is such that they're known as "Budweiser horses." The company in horse-and-wagon days used some 500 assorted workhorses; today, it has only about 100 high-grade drafters, but its breeding stock is considered among the finest in the world beyond the borders of Lanarkshire, Scotland, the Clydesdale's ancestral home.

Even more spectacular than Anheuser-Busch's eight-horse hitches, though shorter-lived, was the 40-horse hitch of Belgian mares and geldings (p. 77) that was sponsored for four years during the 1970s, first by the Jos. Schlitz Brewing Company, then by O's Gold Seed Company. A legendary giant, Dick Sparrow, of Zearing, Iowa, handled this incredible rig with ten lines—some more than 100 feet long—in his gloved, viselike paws. The 240-pound teamster drove the "40" down city streets from one end of the country to the other.

Elsewhere in the world, draft horses are put to even more bizarre uses. On the Japanese island of Hokkaido they race. At four pari-mutuel tracks, the great animals, primarily Percherons, thunder over 220-yard courses containing "hurdles" in the form of small sand hills. The drafters galumph along pulling weighted iron sleds on which their drivers crouch, looking much like charioteers.

Alas, when the Japanese are not racing these horses (an activity for which God certainly never designed

Straining animals are hitched to dynamometer truck that has hydraulic gear to measure their power.

The sale of equipment for horse-drawn farming attracts a crowd to the auctioneer at Waverly.

Pipe-smoking Amishmen survey the sales at Waverly. They have kept horse farming alive.

Huge Belgian on postcard appears in *Guinness Book of Records* as world's heaviest horse (3,200 pounds).

them), they are eating them. Many Japanese prefer horsemeat to beef, just as do many Europeans. The currently active market in the Netherlands, France and Belgium for American horsemeat has placed a floor under the draft-horse market. Today, an owner can expect to get $1,000 from the "killer man" for a castoff 1,500-pound horse. Draft-horse people claim, however, that few purebred drafters go to the "fox farm," as the meat-packing plants are called.

Such hard economic facts have more to do with the draft-horse revival than nostalgia, romance or the entirely genuine love for the animal. Maurice Telleen (pp. 76-77, 84), who, with his wife, edits *The Draft Horse Journal* in Waverly, Iowa—where he also raises

Farmer at Waverly leads one draft horse (or vice versa) as another one ambles behind.

Oxford Down sheep on a 60-acre farm which he works with three Percheron mares—makes a succinct case for the horse. He sees it as "a source of power that reproduces itself, with good care is self-repairing, consumes home-grown fuel, and contributes to the fertility of the soil." The horse, moreover, appreciates in value during its youth and often works productively for as long as 15 or 20 years—nearly double the lifetime of an average tractor. Horses don't compact the earth as machines do, and their use—and feeding—encourages in a natural way the diversification of crops.

A combative individualist, Telleen does not argue that horses will ever replace big, articulated, four-wheel-drive tractors on the vast acreages of agribusiness, though he sees certain uses for the animals on such spreads. Rather, he pictures the horse as an attractive alternative or complementary source of power at a time when tractors can range in price beyond $100,000 and face the constant threat of running on EMPTY in today's unsettled world.

"We're finding this out," confirms M. T. Des Marais of Buffalo, Minnesota, one of the leading breeders of Belgians, by far the most popular horse with American farmers. "We're getting calls from all over the United States and Canada. People are buying. I'm leaving tomorrow morning for Missouri with four horses. One of the farms is 2,000 acres, and this is the second team I will have sold the man. I had a call at seven o'clock this morning from a gentleman in Michigan. He said he wanted to put his tractors in the shed this winter. Says he wants two teams."

The vitality of the draft-horse movement was evident last October when more than 8,000 consignors, bidders and "lookers" attended the Waverly Midwest Horse Sale in Waverly, Iowa—the nation's largest draft-horse auction—and bid on 387 work horses and 16 mules for $672,595. Horse farmers from as far away as Texas, California and Connecticut also left the sale with $111,387 worth of New Idea No. 10 Manure Spreaders, John Deere sulky plows, spring wagons, buggies, surreys, sleighs, cutters and harness—fancy and plain—that filled to overflowing a four-acre lot beside the sale barn. Big Bill Dean, owner, manager and chief auctioneer of the sale, was exultant when it was over. "I tell you, the horse has made a *big* comeback here in the last four or five years. There's *big* money gettin' in this draft-horse business—*big* money!"

A great deal of business was transacted and gossip exchanged in the steel-walled sale barn where for five days in late October, Dean's high-speed chant rasped over the loudspeakers hour in and hour out.

Horse trading went on, as well, between men clustered in the stables, on the paddock fences outside in the bright, cold Iowa sunshine, and in the chow line where wives of local farmers cheerfully served up homemade meals and hot coffee. Western ranchers in white cowboy hats and tooled boots huddled with bearded Amishmen (p. 79) in plain dark-blue suits and black galoshes, and farmers in brown coveralls with bright-colored caps displaying the name of this or that seed or tractor company.

Some could remember when the new tractor companies encouraged farmers to trade in their horses for machines—then sent the animals to slaughter to liquidate the competition. And as their faithful drafters

Horse-lover Peter Chew, author of The Kentucky Derby: The First Hundred Years, *wrote about Morgan horses for* SMITHSONIAN *in August 1976.*

This drafter is no gift horse, so prospective buyer at Waverly looks it in the mouth.

Powerful Belgians move up for the horse pull, their teamster trying to hold them back.

were trundled off to the fox farm by engine power, the farmers looked the other way and succumbed to the blandishments of advertising which promised a life devoid of drudgery: "This is the 1912 SKIBO. The First Successful 18-25 H.P. Gas Tractor. Does the Work of 16 Horses." The horse breeders warn that a farmer nowadays can easily become enslaved by payments for gleaming machines which include air-conditioned cabs with CB radios, tape decks and closed-circuit TV so he can watch the furrows appear behind.

The aristocrats of the draft-horse world are the Old Order Amish, as they are formally known—conservative Mennonites who have been farming with horses for more than 200 years in this country. They get the lion's share of credit for keeping the draft horse alive in the United States after the tractor took over. Moreover, the Amish have specialized somewhat in the Belgian draft horse which, by 1952, was down to 171 registered foals a year. In 1980, registrations, which have been climbing steadily in recent years, are expected to exceed slightly the 1937 high of 3,196.

The Amish continue to demonstrate that even in the era of agribusiness and escalating land prices, it is possible to farm small acreage profitably, thanks in large measure to the horse. They've also kept alive such crafts as harness making and are now cashing in. Amishman Amos Miller from Arthur, Illinois, was busy in his outdoor booth throughout the sale taking orders for his handmade harness including his "No. 200 Deluxe Harness with Chrome Hames, $1500," which is popular with the drivers of multiple hitches in parades and horse shows.

Another keeper of the equine flame, though not an Amishman, is John Kriz, who flew (while his sons drove a 45-foot horse trailer and a flatbed rig) from Bethany, Connecticut. Kriz raises Belgians on a 30-acre farm practically within sight of the Yale Bowl. A seventh-generation farrier, he drives an eight-horse hitch, supplies four-legged extras for motion pictures *(The Brinks Job),* and flies from one end of the United States to the other at Anheuser-Busch expense to shoe their Clydesdales.

It was obvious from talking with people in Waverly that the draft-horse movement has been blessed with a number of articulate propagandists who have been quietly acquiring disciples out there on the land. The future of the draft horse would appear to lie in the hands of these young farmers (and the Amish, of course) rather than with hobbyists. Editor Maurice Telleen is the dean of the new Jeffersonian philosophers. Two others are Wendell Berry of Port Royal, Kentucky, author of *The Unsettling of America: Culture & Agriculture,* a biting attack upon agribusiness which he sees destroying both the soil and soul of America; and Lynn Miller of Junction City, Oregon, editor and publisher of the *Small Farmer's Journal,* subtitled *Practical Horse-Farming.*

Typical of the disciples is a remarkable young man named Jim Gulbranson (p. 82), whom I tracked down on his 105-acre dairy farm in Spring Grove, Minnesota, a few hours' drive northeast from Waverly through glorious country where rows of corn flowed toward the horizon and beyond. Gulbranson, tall, bespectacled, 30 years old, is a voluble, self-styled "stubborn Scan-

Their work over, these Percherons roam Minnesota
pasture of David Benson. The breed goes back

dinavian." At a time of ever-increasing monopolization when 200,000 of the nation's 2,700,000 farms produce nearly two-thirds of all crops and livestock, he has this advice for other young people interested in going into farming: "If you stay small enough to use horses—or even small tractors—then you're OK."

With his wife Suzanna, a registered nurse, Gulbranson occupies a spacious, century-old frame house on windswept "Norwegian Ridge," as it's locally known. His home served until recent years as parsonage of Our Saviour's Lutheran Church where his great-grand-

Jim Gulbranson, on corn picker, drives team
of Belgians. He has seven on his Minnesota farm.

parents, grandparents and parents were married. Gulbranson bought the farm for $140,000 a few years ago. With the help of his father, Nels, a recently retired farmer, he made a $40,000 down payment, now must clear $17,000 annually to meet mortgage payments on the remaining $100,000. He says that he is meeting them, just, thanks to the horses. He and his wife say that they appear to have more leisure than their highly mechanized, large-acreage neighbors.

"They farm day and night," says Gulbranson. "They have this big machinery; they can't have it sitting around because it takes money so they've got to farm all this land. The machinery payments are what's setting them back. And once your machinery's paid for, it's worn out. It's really stupid to say you're 'gaining time' by using a tractor. I go out with my Belgians and disc and I can work up ten acres in a day. I have lunch and I can relax a little bit and all the neighbors are zipping back and forth. Well, I'm making more on my land than they are with twice as much. There's *no* cost to farming with horses. Your mares reproduce. You get a new 'tractor' every year. You get your feed bill back in fertilizer. You have to throw on the harness in the morning and that's your hardest work all day. You sit there while you plow and you totally relax."

Like other young horse farmers with whom I've talked, Gulbranson concedes that there's an emotional quotient involved in his decision to go with horses: "You can look and see you plowed ten furrows in just a little bit and you really feel—you get a good feeling about it. After you get done you walk over the plowed field and look at what you're going to do next day.

to the late 18th and early 19th centuries in
plains region of northern France called Le Perche.

Besides, my tractors don't say 'good morning' to me."

At 5:45 A.M., he sets the automatic milking machines for his 16 Holstein cows in the old barn downhill from his house, then repeats the process at 5:45 P.M., a routine which he has carried out even when the temperature has hit 28 below. After feeding the cows and horses and mucking out their adjoining quarters, he uses his Belgian teams for spreading manure, plowing, disking, dragging, cultivating and raking his 28 acres of corn, 14 of alfalfa, 13 of soybeans and eight of oats. At harvest time, he has access to his younger brother's corn picker and combine. He has a few old tractors for power-takeoff purposes and occasional plowing.

Gulbranson's horses are rapidly becoming a valuable cash crop. A few years ago, he bought two mares for $1,500. Last spring, he sold two of their offspring, by his prize stallion, for $4,000 (the buyer later sold them for $10,000).

As might be expected, Gulbranson came by his passion for horses early on. There were no horses on his father's big farm when Gulbranson was growing up. But neighbor Jon Halvorson still employed drafters and he would put the little boy up on their broad backs in the evening when the plowing was done. Those rides through the twilight are happy memories. The boy built a wooden horse in his father's barn and practiced throwing a harness over it. In time, he started picking up cheap carriage horses and driving them to a buggy. He has bought all of his equipment for less than $4,000 total at auctions and has refurbished it.

"Old things, I think it's in a person," he told me. "I like old people, too. Americans are so 'throwaway everything.' When people get old they kick them out. You can learn so awful much from old people—all they've been through. I don't care whether it's furniture or a wooden barn that was built I don't know how many years ago. These tin sheds they put up now!"

He pauses. "You know, when I farm this way, so many people stop out there on the road and just laugh. Well, I'm kicking up a little dust."

The tall Norwegian says goodbye and heads out to untie two Belgians from a fence where they wait for the afternoon work to begin.

Belgian filly looks over Gulbranson's barnyard.
He considers her a "new tractor"—for free.

Gray Percheron says
good morning as
the day's work begins

Shell Answer Series #22

HOME ENERGY SAVINGS

Some simple ways to help you save up to 50% on home energy.

By Sheldon Lambert, Shell Manager of Energy Economics

Come to Shell for answers

Lift these advertising pages out by removing staples.

Follow the steps in this guide.
Then keep it handy as an energy-saving reminder.

Good news! You don't always have to sacrifice comfort or convenience to conserve energy. And you don't have to *spend* a lot of money before you start *saving* money.

Some of the conservation measures in this guide are absolutely free and can start saving you money today. Some others should pay for themselves with the energy and money they save.

In Washington, D.C., I met with Jim Tanck, Director of the Residential Conservation Branch of the U.S. Department of Energy. He told me about various government grants and tax credits available to people who improve their home energy efficiency.

I learned about many of these methods by visiting with Dr. Arthur H. Rosenfeld at the Lawrence Berkeley Laboratory in Berkeley, California. Their Energy-Efficient Buildings Program is one of the tops in the nation.

I also talked with officials on national and local levels to learn what's being done to encourage conservation in the home.

My findings are in this guide.

How much *you* can save depends on where and *how* you live. An energy audit can give specific tips for you and your home. Some utility companies already offer home energy audits and, by law, they'll all have to do so by the fall of 1980.

Q. What's the biggest energy waster in my home?

A. Your home, itself.
About ⅔ of the energy used in most homes is for heating and cooling. But hundreds of your heating and cooling dollars may be leaking out through windows, doors, tiny cracks and holes, and poorly insulated ceilings, walls and floors.

Q. Cracks and holes! In my home?

A. In every home.
For every electrical outlet, plumbing pipe and fireplace, you'll find a hole.

And where two surfaces join together, you'll often find a crack.

The red areas in this infrared photograph show where poorly insulated and sealed homes leak energy the most: around windows, doors and roof. (Photo courtesy of Owens-Corning Fiberglas Corp.)

Cracks can often develop where the door meets the frame, or the frame meets the wall. Many times, you'll find cracks around floorboards and staircases. And many of your heating and cooling dollars could be leaking out through these places.

Many small leaks can add up to big losses. You need to find them and plug them up.

Q. If I can't see leaks, how can I find them?

A. You can feel many of them. On a cold, windy day, run your hand along the edges of windows, exterior

This photograph shows how air leaks around a window without weatherstripping. If your windows leak, add weatherstripping. And caulk any cracks where the frame meets the wall.

About the author

Shel Lambert is Shell's Manager of Energy Economics–Corporate Planning. He joined the company in 1958 after receiving his Ph.D. in physical chemistry from Ohio State University. His corporate and academic accomplishments are many, including 30 technical papers, contributions to textbooks, and serving on numerous national committees and task forces.

1. Caulk around outdoor faucets. 2. Weatherstrip doors. 3. Pack fiberglass insulation between wall and electrical outlet box. 4. Weatherstrip windows. 5. Insulate holes around pipes and wires. 6. Replace worn-out caulking and weatherstripping.

doors and baseboards. Where there's a leak, you'll feel a cold draft.

If you follow the checklist on page 7, you should be able to make your house reasonably weathertight, for very little money.

Eliminating drafts and cold spots should help make your home more comfortable, too. Then your home can *stay* warmer in winter and cooler in summer, while you spend less on heating and cooling.

Q. I sealed my windows. Why are they still cold?

A. Sometimes sealing cracks around windows isn't enough. The glass itself can steal heat from your home in winter months, and let the sun's heat in during the summer months.

You can cut this heat loss in half by adding storm windows or double-glass windows. And here's a money saver that's free:

On winter days, pull the draperies back from windows facing the sun to let the warmth in. (This is "passive solar heating.") At night, cover all windows to keep the heat in.

On summer days, keep the draperies closed to keep the heat out. (Light-colored draperies or shades reflect the sun best.)

Q. Which is more important: fixing leaks or adding insulation?

A. They're both important, because they work together. Insulation is much more effective in a home that is weathertight.

Most homes need good attic insu-

lation. Without it, the attic will add heat to your home in summer, and let heat escape in winter.

Heat is also transferred through the walls. And through floors over unheated spaces like garages and crawl spaces. If you have especially harsh winters or summers, you may find it worthwhile to add wall and floor insulation.

You may be able to install attic and floor insulation yourself. But adding wall insulation to an existing home is tricky. It takes special equipment. Be sure you choose a reputable firm.

How to make your water heater a money saver.

Water heaters burn about 15% to 20% of your home energy dollars. To help use less, try a lower thermostat setting. If yours is set for 140°F, 110°F may be sufficient. If it doesn't show degrees, just turn it down some. Wait a few hours, then check the temperature by holding a thermometer under the tap when the water's hottest.

Touch your water heater. If you feel any heat, you're losing energy. Insulation helps. Kits cost about $10-$20 at hardware and plumbing supply stores. If you insulate and lower the thermostat, you can cut your water heating bills by about 20%.

Q. Do all energy-saving measures cost a lot in time and money?

A. Absolutely not.

Here's a list of extra easy, extra cheap things you can do to save on energy. Some are absolutely free.

Gas furnace pilot light. Turn it off in spring and back on in fall. (Be *sure* you know how, or ask your utility company.)

Shower flow limiter. This helps you save on water and water heating, too. Add a simple washer to your shower head (ask your hardware man to help) or buy a shower head designed to limit flow while still giving a comfortable shower.

Cold water wash. Some laundry detergents are effective in cold water. A big hot water saver.

Fans & space heaters can keep individual rooms comfortable for much less than it costs to heat or cool the whole house.

Thermostat setting makes a difference, too. Adjust the thermostat so the system won't work as hard when you're away from home. Do the same when you go to bed.

Electric blanket lets you sleep comfortably warm while house is cool. Much cheaper than heating your house, or even your room.

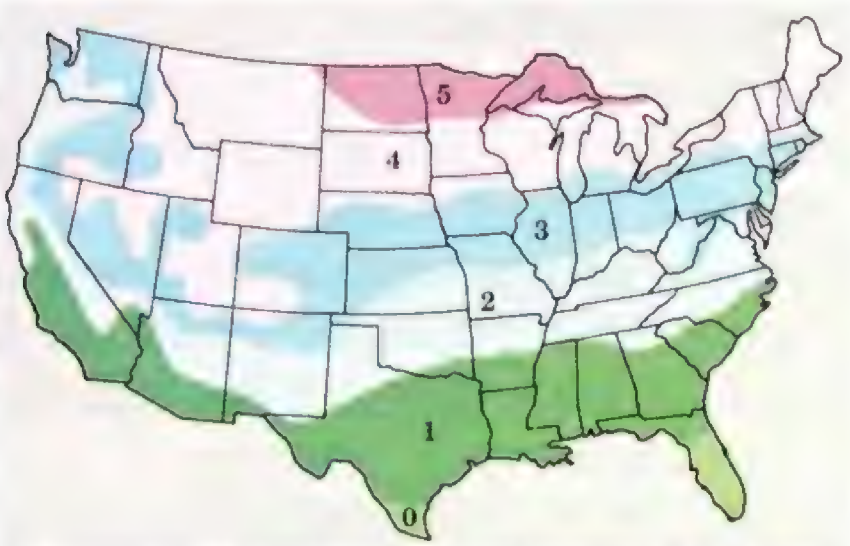
Small appliances in the kitchen

skillets, toaster ovens, automatic coffee makers, microwave ovens, and slow cookers all might well do the job while using less energy than a conventional electrical oven and range.

Common sense. Dress for the season, even indoors. Keep windows and doors shut while using air conditioner or heater. Step quickly through doors to reduce air loss. Close off doors and air ducts to unused rooms.

Q. How much insulation is enough?

A. It depends on the weather where you live. The map on this page, provided by the National Solar Heating and Cooling Information Center, gives minimum recommended "R-values" for attic, wall and floor insulation in different parts of the country. R-value is a measure of insulation's resistance to heat transfer. The higher the R-value, the better the insulation.



HEATING ZONE	RECOMMENDED FOR CEILING	WALL	FLOOR
0, 1	R-26	R-13	R-11
2	R-26	R-19	R-13
3	R-30	R-19	R-19
4	R-33	R-19	R-22
5	R-38	R-19	R-22

Sources for R-value data above include Federal Housing Administration, American Society of Heating, Refrigeration and Air Conditioning Engineers and insulation manufacturers.

Dr. Rosenfeld showed me one of the new fluorescent lights designed to fit ordinary light bulb sockets. Fluorescent bulbs give just as much light for less than half the energy of incandescent bulbs. And they last much longer.

Q. Can different appliances really make a difference in saving energy?

A. Definitely.

For example, take two comparable refrigerators. One might cost 50% more to use than the other.

And there is governmental help on the way, too. In an effort to help you shop even more wisely, the Federal Trade Commission is planning new requirements for several major home appliances.

Manufacturers would have to label their products with cost or energy-efficiency data, giving comparisons with similar products.

How to save up to 40% on your heating and cooling bills.

About ⅔ of your home energy dollars go for heating and cooling. But if your home isn't weathertight, you could be wasting up to 40% of your money.

You can probably plug up most leaks with materials you can buy at your local hardware store. Ask your salesperson how much to buy.

Caulk. Buy this soft, putty-like substance in "cartridges" and squirt it into cracks with a "gun." (I recommend an acrylic *latex* caulk.) Cost: for average home, about $10 to $17.

Oakum caulk rope. To seal larger cracks, pull off pieces of rope and stuff into opening. Cost: about $.70 to $1.30 per pound.

Weatherstripping. Strips of metal, rubber, foam, or felt which you tack or glue around doors and windows. Different kinds for different uses. Ask your hardware man for his recommendations. Cost: about $2 to $8 for each window, $4 to $10 for each door.

Use this list to help find leaks and fix them.

• **Windows and doors.** When they're closed, can you see cracks around the edges or feel a draft? If so, add weatherstripping. Caulk any cracks where frame meets wall.

• **Pipes, ducts and wires.** Check holes cut for these in floor, exterior walls and ceiling. Seal any openings with caulk or fiberglass insulation. (Wear gloves when handling fiberglass.) Insulate ducts and heating pipes in unheated spaces.

• **Electrical outlets** and light switches on exterior walls. Cut off electricity. Then remove cover plate and pack fiberglass insulation between outlet box and wall.

• **Foundation seal.** Check for cracks along outside wall between concrete foundation and house. Stuff with oakum caulking rope, caulk over it.

• **Mail chute** in door or wall. Does it close tightly? Oil hinges.

• **Fireplace.** Close damper tightly when not in use. If no damper, cover opening with wood. Caulk cracks where fireplace meets wall.

• **Exhaust fans** in bathroom and kitchen. Use as little as possible. Keep filters clean. Remove covers and caulk any major cracks around fan.

• **Attic door.** Be sure door fits tightly. Weatherstrip where needed.

• **Basement door.** Keep it closed. Weatherstrip for tight fit.

• **Garage door.** If garage is attached to house, weatherstrip garage door and door between garage and house.

• **Broken siding or shingles.** Replace them. Or to close small cracks, tack or glue loose pieces back in place.

• **Masonry cracks.** Caulk any deep cracks in exterior walls.

• **Old caulk and weatherstripping.** If torn, bent, or chipped, remove and replace.

A no-cost way to hold down heating and cooling bills is to adjust your thermostat. It is estimated that you can save 1% to 2% on your heating bill for every degree you lower your thermostat in winter. In summer, keep the thermostat at 78° to save up to 30% on cooling costs, depending on regional location.

Q. How can I save when washing and drying clothes?

A. One way is to do fewer full loads rather than a lot of half-full loads. And consider this. Every time you use a clothesline instead of a dryer you save money, too.

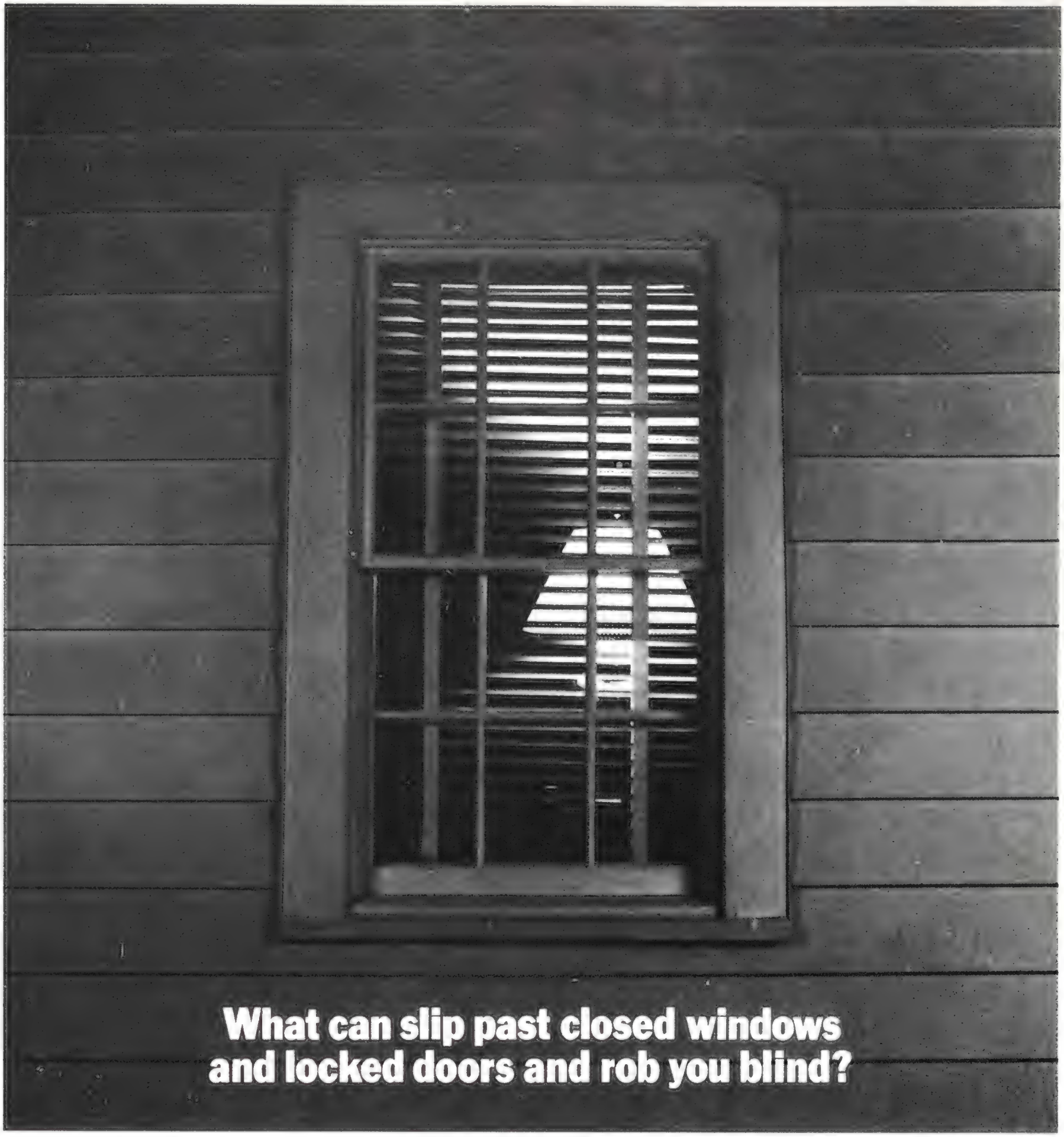
Q. Any questions?

A. If you have any questions about the information in this guide, write to me, Sheldon Lambert, P.O. Box 61609, Houston, Texas 77208.

And for more information, contact your local utilities. Or write to Technical Information Center, Department of Energy, Box 62, Oak Ridge, Tennessee 37830.

How to get more answers from Shell. *These and other Shell Answer Books are available at participating Shell dealers. Or you can write Shell Answer Books, P.O. Box 61609, Houston, Texas 77208.*

Come to Shell for answers

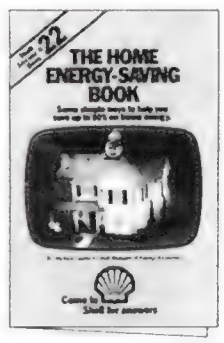


What can slip past closed windows and locked doors and rob you blind?

In winter, it's the cold air that sneaks into the house you're trying to keep warm. In summer, it's cold air slipping out of the house when you want to keep it in. When your house leaks air badly enough, it can make your furnace and air conditioner work overtime, and send your energy bills sky-high.

Shell's new Answer Book, The Home Energy-Saving Book, can show you easy do-it-yourself ways to fix those air leaks and cut your heating and cooling bills by up to 40%. It also contains many other simple tips to help you cut your overall home energy bills by up to 50%.

The book is absolutely *free*. You can pick one up at any participating Shell station. Or you can write to Shell Answer Books, P.O. Box 61609, Houston, Texas 77208.

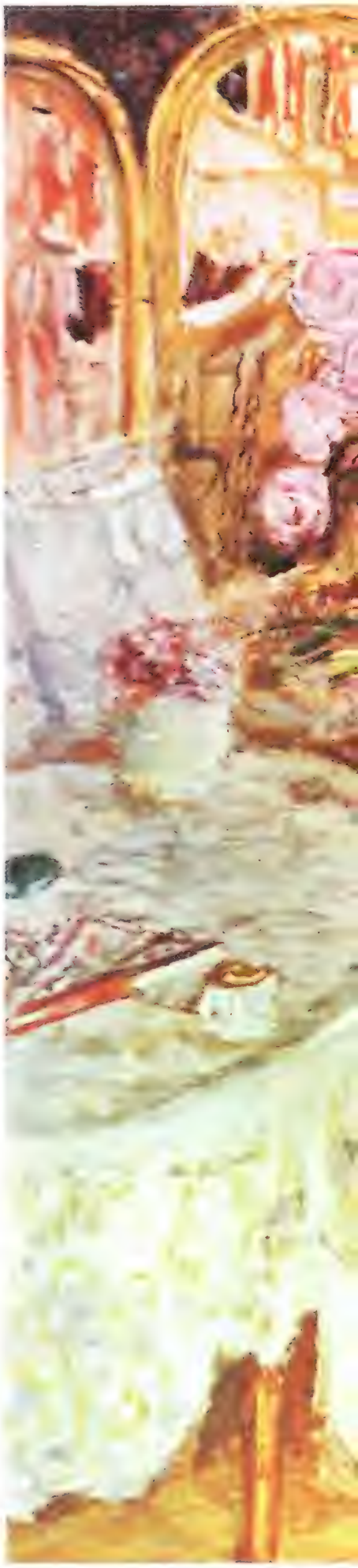


Come to Shell for answers

By Tom Prideaux

Misia, a free spirit, knew (and loved) just about everyone

She had three husbands and numerous lovers, she was described by Proust and portrayed by many painters, and she kept Paris jumping



Misia and her friends loved to dress up. Chaplinesque costume worn above predates Charlie's by several years. Right: *Misia aux Roses* (1909), one of the many portraits of her painted by Pierre Bonnard.

It is Tuesday night, June 13, 1911. Many of the audience recognize Misia Edwards, ablaze with jewels and her crown of chestnut hair, sitting in her box at the Théâtre du Châtelet.

Misia is something of a hostess, guardian angel and financier for the new Ballets Russes, so expectedly she is on hand when the dancing Russians come to her hometown, Paris. Tonight is the world première of *Petrushka,* with music by her young friend Igor Stravinsky, and the role of Petrushka, a lovesick puppet in a carnival, is being danced by Vaslav Nijinsky.

The theater lights dim for the ballet to begin, but nothing happens. The audience sees a man walk into Misia's box, bend down and whisper to her. Some recognize him as Serge Diaghilev, the founder of the Ballets Russes. Misia dashes from her box, and for ten minutes longer the baffled audience waits.

Diaghilev has told her that an irate *costumier* is waiting backstage with some last-minute alterations on important costumes and refuses to hand them over unless his bill is paid immediately. The ballet is stymied. Luckily, Misia's chauffeur is waiting outside, so he drives her home, she grabs money from her safe, tears back to the theater, pays the stubborn man, and the curtain rises on a Russian street fair, swirling with gypsies, peddlers, coachmen, street dancers and an old magician with three puppets. It has continued to swirl ever since as a popular ballet classic.

The fast-moving Misia is the subject of a new biography, *Misia* (Knopf), by Arthur Gold and Robert Fizdale, who are best known as a first-rate team of concert pianists. Their book both portrays an incredible woman and illumines the Paris art world that she helped rule. All 17 of the book's color illustrations are pictures of Misia by some of her noted friends—Renoir, Toulouse-Lautrec, Bonnard, Vuillard, Cocteau, Félix Vallotton—though she was never a professional model. Misia hangs now in U.S. museums from San Diego, Los Angeles, Fort Worth, Houston and Norfolk to the

Collection of Mrs. James Stewart Hooker, Palm Beach

Barnes collection in Merion, Pennsylvania. She is also on view in a number of U.S. private collections. Altogether, Misia has been seen by millions of Americans, but usually as an anonymous figure.

Misia was half Polish, half Belgian. Her handsome Polish father, Cyprian Godebski, was a popular sculptor whose grandiose monuments were planted all over Europe. He met and married Misia's future mother, Sophie Servais (daughter of a celebrated cellist), when he came to decorate her family's villa near Brussels.

The newlyweds lived in her family home until Sophie's husband went to St. Petersburg on a commission, then fell in love and moved in with Sophie's aunt Olga (his mother-in-law's sister!), who happened to live there. Sophie, eight months pregnant with her third child, set forth alone to win back her straying husband. She died almost as soon as she reached St. Petersburg, after giving birth in 1872 to Misia.

Misia Sert, a free spirit

Often ignored by her father (who had had another child by his mistress), little Misia was shunted between schools and households, having her happiest times with her mother's family back in Belgium. There she took piano lessons and met many illustrious musical visitors, such as Franz Liszt, who sat enthroned at the family piano holding Misia on his lap so that *she,* not he, could play a Beethoven piece. At the end he said, "Ah, if only I could play like that." She never forgot it.

Later, in Paris, where her father was living with Matylda, his second wife, Misia fell in love with Matylda's nephew, Thadée Natanson, and her helter-skelter life began to take form.

Thadée and his two brothers were starting a new magazine, *La Revue Blanche.* Its cultural blue plate included prints and illustrations, many by the same artists who painted Misia. Toulouse-Lautrec was hired to paint an advertising poster which showed a spiffy redhead racing forward on ice skates (her skates were implied, not seen in the picture, p. 101). To be sure, Misia posed for it.

Misia flung herself with such gusto into *La Revue Blanche* that it appeared she had married not a man but a magazine. She helped read and select manuscripts, coddled contributors and gave parties in her salon, which was called "the annex." On a sort of belated honeymoon, the couple made a pilgrimage to Oslo to meet the great playwright Henrik Ibsen. Misia caught him taking off his topper, peering into its interior and fluffing up his side whiskers, then realized with glee that he had a mirror in the crown of his hat.

Misia and Thadée had two summer homes on the Seine near Paris, where frequent guests were Pierre Bonnard and Edouard Vuillard. Both important painters, they contributed to *La Revue* and belonged to a group called Intimists, a branch of the better-known Nabis. They used many "light effects" of the Impressionists, but favored intimate indoor scenes. The Natansons provided exactly the right haven for these men, an informal place for boating, picnics and nights of music. Misia had studied piano for several years with Gabriel Fauré. Her neighbor, the poet Stéphane Mallarmé, used to drop in, enchanted by Misia's keyboard version of Beethoven's Fifth Symphony. (Later, Maurice Ravel dedicated three compositions to her.) Toulouse-Lautrec joined the group for long weekends, lolling in the grass and pretending

Tom Prideaux, critic of the arts, writes frequently for SMITHSONIAN (on Roger Stevens, January 1979).

Left: Young Misia wore another costume, this time vaguely Polish, in about 1890.

Above: Misia and Thadée Natanson, her first husband, in the country.

to paint with a brush on the soles of Misia's bare feet.

From the wealth of anecdotes in the Gold-Fizdale book, it is clear that the relationship between Misia and her friends was mutually supportive. They needed one another. It has been argued that within the French avant-garde art world around 1900 the Cult of Self was the rule. True, and for ample reason. A new breed of artists was pioneering in many directions, defying the old conservatism of the Académie des Beaux-Arts and the new conformity that came with industrial progress. Sharing a common risk, they gravitated together in a sort of adventurers' club, a cult of interlocking selves and meshing egos. Misia was in tune with her restless artists. Not a member of high society, she was more valuable to them as a High Bohemian. Having felt homeless herself, she knew the value of a welcome mat.

In a theater, Misia chanced to meet a boorish but oddly magnetic tycoon, Alfred Edwards, who owned a Paris theater and a major newspaper, *Le Matin*. Falling wildly in love with Misia, he finally promised to make her husband fabulously rich by putting him in charge of coal mines in Hungary. By 1904 Misia had divorced Thadée and married Edwards.

Edwards arranged for Renoir to paint his new wife in a series of portraits. In his 60s and crippled with arthritis, Renoir arrived at the Edwards' house in his wheelchair three mornings a week, accompanied by one of his favorite models, Gabrielle, who played cards with Edwards in a nearby room while the master worked. With remorse, Misia recalled later that she had refused Renoir's request to see her breasts. "Several times," she wrote, "I saw him on the verge of tears when I refused. No one could appreciate better than he the texture of skin, or, in painting, give it such rare pearl-like transparency. In retrospect, my prudishness seems to me stupid, since it was a question of an artist whose extraordinary eye suffered terribly when he was not allowed to see what he guessed was beautiful."

While swathing Misia in every luxury, Edwards at 50 fell dementedly in love with Geneviève Lantelme, a teen-age actress who had worked in her mother's brothel, and set her up in an elegant townhouse. When Misia called on her to beg the girl to give up Edwards, Lantelme agreed on three conditions: Misia must give her a million francs, her pearl necklace and herself sexually. Misia refused and the affair went on.

Misia left Edwards, but soon took serious notice of a passionate Spanish muralist, José Maria Sert, who invited her on a trip to Rome, showed her amorous Renaissance paintings by day and reenacted them with her at night. Sert, said to resemble "an enormous gnome," lived and painted in the grand style. He had been commissioned to decorate the cathedral in Vich in Spain. (Much later, in New York, he painted murals in the RCA Building and in the Sert Room of the Waldorf-Astoria.) Misia wanted to marry Sert, and finally did in 1920.

At a Paris restaurant, Sert introduced Misia to a visiting impresario, Serge Diaghilev, who hoped to awaken Paris to the glories of Russian art: painting, opera, and now the imperial Russian ballet. Misia was stirred; she felt needed. Clearly, Diaghilev was not a bed mate, but the couple felt they were soul mates: born in Russia—same year, same month—and both losing their mothers at birth. And they could both be childish, arrogant and artistically discerning. Misia vowed to help him raise money, and became his devoted confidante for the rest of his life.

Misia strolls on houseboat of her rich second husband, Alfred Edwards.

On the Lido, Venice: Diaghilev, Chanel, Misia, an Italian contessa.

In Venice in 1947, Misia looks thin and old, but still chic.

Tel Aviv Museum, gift of Dr. Herman Lorbor, New York

This is one of the several portraits of Misia by Renoir, c. 1906, commissioned by Alfred Edwards.

Vuillard also painted Misia many times. Here, dated 1899, painter Félix Vallotton is behind her.

Private collection

The unique genius of Diaghilev is explored in a valuable new biography, *Diaghilev,* by Richard Buckle. He reminds us that Diaghilev assembled his team of major talents from the fields of painting, music, dancing and literature, and shook them up, so to speak, to create a new and dazzling kind of ballet.

Misia wanted more French artists drawn into the ballet, and was rewarded when Diaghilev presented *The Afternoon of a Faun* in 1912, using Debussy's existing music, which was inspired by Mallarmé's poem of the same title. But it was hardly a tranquil triumph. When Nijinsky, as the lovesick faun, expressed his stifled longing for a flock of Greek nymphs by fondling and falling upon one of their discarded veils, the Paris audience howled with rage at the hint of autoeroticism. Debussy, attending a preview, was so shocked that Misia tried to explain gently. "The faun has married the veil he tore from the nymph," she said, but Debussy cried, "Go away. You are horrible," and left.

A fairy godmother, also a witch

In 1914, Misia invited the French composer Erik Satie to play some of his works for Diaghilev in the hope that he might be hired to write a ballet score. But nothing much happened until the war's last year, when Satie, Picasso and Jean Cocteau got together to create *Parade,* with dancers dressed like cubist skyscrapers and a clicking typewriter in the orchestra. In this jaunty enterprise, Misia was the villain, they said, because in Diaghilev's absence she was too bossy.

In his recent excellent biography, *Cocteau,* Francis Steegmuller quotes Valentine Hugo, one of the many artists who painted her portrait, on Misia's paradoxes: "a fairy godmother one moment and a witch the next, frightfully malicious, adorably generous, out to destroy everything in the arts that hadn't been hatched or at least nurtured within her own four walls."

Certainly, in the case of *Parade* the hatching process was hotly disputed. Cocteau called Misia "Abortionist" and "Aunt Brutus" (implying she stabbed friends in the back). But in a few weeks he was all lovey-dovey, writing to Misia, "I'm impatient to hug you . . . and kiss away a thousand misunderstandings." In the mood of restored amity, Picasso asked Misia to be a witness at his wedding to the dancer Olga Koklova, and then godmother to their son, Paulo.

Misia's life gave her a glut of opportunities, and she wanted to sample them all. Nonconformity was her hobby. When she and Sert finally chose to marry, they took Misia's close friend, Coco Chanel, on their Venetian honeymoon. Later, when Sert was bewitched by a teen-age Georgian princess, Roussy Mdivani (her brothers made a career of marrying rich Americans), Misia welcomed Roussy into their household. She was

Private collection

In this domestic scene, *The Natanson Brothers, Misia and Léon Blum* (1898-1900), Edouard Vuillard shows the four friends playing a game (perhaps poker?) in the golden glow of two hanging lamps.

shattered when the lovers decided to marry, but she help Sert pick out the engagement ring and even decided to join them on their honeymoon cruise to Greece. Owing to a mix-up in reservations, Misia had no stateroom, so Sert gallantly took a cramped single cabin, leaving the bridal suite to the ladies.

A casual little glimpse of Misia is afforded by the noted ballerina Alexandra Danilova, now living in New York and recently seen in the film *The Turning Point*. At 16, Danilova came to Paris from Russia with a small troupe that included a young man, aged 20, named Georgi Balanchivadze. They were asked by Diaghilev to audition for him in Misia's grand drawing room, dancing to piano music by Scriabin. Danilova recalls that Misia wore a dark red, full-skirted, low-necked Tartar dress—and diamonds. "She was *une belle femme,* but not really beautiful. Very motherly. She asked how I liked Paris. I said, 'It smells.' Then I explained I had a room near Les Halles, the food markets, and it didn't smell nice." Danilova and her friends were hired by Diaghilev; the young man shortened his name to George Balanchine, and eventually became one of the world's greatest choreographers.

In a few years Misia sat at the deathbed of Diaghilev in Venice, and in 1938 she hovered for many nights over Roussy as she was dying of tuberculosis. Meanwhile, a business venture took her to New York, where she had the fun of taking piano lessons from Eddie Duchin, learned to play Gershwin, and drummed up posh jobs for Sert.

During World War II, Sert as a neutral Spaniard was favored by Germans occupying Paris, and was able to free some of Misia's Jewish friends. Misia regained her old verve when Sert asked her to play hostess at his dinner parties. But, mostly, the war years were a period of equivocation and shame. When Sert was dying in Spain, Misia rushed to him, arriving only as he was being entombed in, oddly, a Capuchin monk's robes.

Misia spent her last years in Paris, living with her niece Mimi and a male secretary. After a painful eye operation, she was almost blind and dependent on drugs. One evening, after her name was found on a drug dealer's list, she was arrested and jailed overnight with derelicts and other addicts. Back home in her apartment, her life began to ebb, and in October 1950 a priest was called in to perform the last rites. A few old friends, including Paul Claudel, Cocteau and Coco Chanel, dropped by. During the night Misia died. Chanel was notified and came over in the morning. Within an hour, the world's foremost creator of women's fashions had used her art to make Misia beautiful, ready to go on display for the last time.

Aside from all the paintings of her, Misia appeared as a major character in four plays, two little-known novels, and one literary blockbuster, Proust's *Remembrance of Things Past*. Seemingly, Proust found her so full of fascination that he cut her in half. Making two characters out of one—the young Mme Verdurin and, briefly, the older Princess Yourbeletief, a patroness of Diaghilev's ballets—he drew them both with wit and graceful disdain. Yet Proust liked Misia, at least at times. Turning down an invitation from her, he wrote, "It is a good many years since I have gone to a party.... But for the first time I am tempted. Nothing would please me more than to come to you, than to see you."

The authors of the present book came to Misia indirectly. They had planned to take a year off from their active concert career and write a book on the French composer Eric Satie. But while looking into Satie, they learned more about his friend Misia, and were inescapably trapped. As it happened, they had never met her personally on earlier trips to Paris, but knew many of her friends. They conducted more than 150 interviews, read piles of documents and located all the major pictures of her.

The new book, while immensely entertaining, is serious by implication. It reveals the essential humanity and high spirits that united many artists who were drawn to Paris in the early 20th century. If they sometimes appear self-indulgent, their capacity to create was helped by their capacity for enjoyment. It bubbled over one night in Paris in 1919 at a party thrown by Misia in her apartment after the triumphant opening of a new Diaghilev ballet, *The Three-Cornered Hat*, with settings by Picasso and music by the Spanish composer Manuel de Falla. Amid the jubilation, Arthur Rubinstein was at a piano, lovingly performing Falla's music. And Falla himself was on hand, a small man bursting with delight. Picasso, too, wanted to pay homage. He sketched a crown of laurel leaves on Falla's shining bald head—with Misia's eyebrow pencil.

Caricatured by Mikhail Larionov as elegant dog, Misia sits in the center. Others in her pack, clockwise from upper left, are Ernest Ansermet, the conductor; Picasso; the poet Guillaume Apollinaire; Igor Stravinsky; dancer Serge Lifar; Diaghilev; dancer-choreographer Leonid Massine.

Furred, feathered and muffed, Misia promotes her husband's magazine on Toulouse-Lautrec poster.

Musée Toulouse-Lautrec, Albi, France

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By Les Daly

A new gold rush draws prospectors to Mother Lode

The chances of striking it rich are remote, but the seekers—amateur and professional—are in the game for fun and (maybe) profit

This 50-ounce bar (worth some $25,000) is from the Blazing Star Mine near Alleghany, California.

It was a big day in Alleghany, California. Dick and Debbie were getting married, and about 125 people were going to attend. That's about all the people there are in and around town. The actual number is a little vague because the place doesn't have a mayor and no one knows for sure who's come or gone until something like a wedding occurs and everyone turns out.

"We're all mayors, so there's nobody to do the counting," said a fellow in the bar of the Golden Eagle Inn (where Debbie had been barmaid), as he snapped open a cold can of beer, Alleghany's *vin du pays,* and took a long swallow. It is the kind of town where Dick Claussen tacked up posters to announce his forthcoming marriage to Debbie Fields and made the event something of a town meeting. Strangers passing through were invited to "come to the wedding" as if it were a Fourth of July picnic. And in a way it might have been. Everyone came and brought his or her own case or six-pack (there was also plenty of California wine and champagne) and sat around on bales of straw in the front yard of the couple's little cottage with the sign over the door that said "Our House."

The gathering stood in the shadows of tall Douglas firs to witness the vows. Most guests wore blue jeans or pantsuits and boots, and the bridegroom wore a new pair of brown cords and a tan shirt. The bride wore a full-length gown of light blue calico and white eyelet and a band of wild flowers in her blond hair.

As a wedding present, Danny Mason (opposite) gave the newlyweds a copy of *Gold Quartz Veins of the Alleghany District, California,* published in 1932 and now out of print. For Alleghany is one of those almost-forgotten villages in the western foothills of California's Sierra Nevada in the region called the Mother Lode. Dick and Debbie, Danny Mason, Jim Seltsam, Cecil von Klein and all the other members of the wedding party are in one way or another caught up in the rising gold fever that is spreading around the world and into the canyons and corners of California.

Near Alleghany and dozens of other tucked-away towns like Angel's Camp, Amador City, Volcano and Downieville, the mines (particularly the quartz deposits of the Nevada City-Grass Valley area) produced hundreds of millions of dollars in gold from 1849 to the early part of this century. Then the gold mines shut down and the towns slipped into silence.

But recently, with gold prices at record levels, the Mother Lode has started reawakening. If it is not yet like the 1849 gold rush, there is certainly a quicker walk. All kinds of people are beginning once again to prowl the mountains, the ravines and the riverbeds. There are professional miners and people looking for adventure—or tax shelters. Families in their campers and trailers are taking vacations here and hoping they will find gold and at least make expenses. There are

Danny Mason and friend Susan Lee work Irelan Mine near Alleghany. Behind them is railbed for ore cars.

Color photographs by Christopher Springmann

hard-rock miners who have come down from the wintry mountains of Canada and softer, smoother fortune hunters, up from San Francisco and Los Angeles.

Danny Mason came to the Mother Lode from Michigan, and his family's nursery business near Ann Arbor. With longish graying hair and pale green eyes, he is 31 years old and looks like Billy the Kid, except that he carries a scuffed brown attaché case instead of a six-gun. He sits down on the porch of the 128-year-old National Hotel of Nevada City, a hotel that gives you the feeling John Wayne is probably in the next room, and orders a cup of tea.

"It's proven now that a lot of the old-timers lost a lot of ore veins; they worked what is called 'dead quartz,' " he says, riffling through a mining report. "People today know a lot more about geology, a lot more about technology and how to get the gold out. The old-timers just didn't know as much and lost the veins." Some present-day miners, like Mason, believe that the gold rush, fabulous as it was, skimmed only about five percent of the gold the Mother Lode holds.

"Gold has been neglected for years here in California," says Al Farrell, a miner and mine operator all his life. He has come down from Calgary, Alberta, to reopen a mine called the Blazing Star, near West Point, a town named by Kit Carson as the westernmost point of his explorations.

Farrell and Mason are two of those several different breeds of people who are looking for gold in the Mother Lode. They and their counterparts are mostly individualists, not particularly rugged but of the type that might be classified as the "other" Californians. You can drive the Mother Lode Country for a week and never encounter a personalized license plate.

After ten years in Paris and ten in Los Angeles, writer Les Daly recently moved to Washington, D.C.

Just as it was in the old days: a lone prospector, watched by his hungry burro, waits for the

There is jazz and rock and bluegrass in Nevada City and Jackson, the music is live, not disco, the jeans are timeworn, not tailored, and the men and women at the bar talk about gold nuggets, not necklaces.

The Mother Lode hills nourished Bret Harte and Mark Twain; it was an area that was as fertile for writers, in their way, as for miners. Today there still emerges from the lion-colored hills and the dark-green forests the feeling that the pursuit of gold is perhaps as much a quest of the spirit as it is a search for riches.

Most of the mines are worked by just two or three men. Getting to the gold is gritty, not glamorous, work, and the miners aptly refer to it as "dead work." The old, watery mine shafts must be pumped out and retimbered, particularly near the entrances. Mason needs 10,000 board feet of Douglas fir to shore up his Irelan Mine, six miles outside Alleghany.

He drives his pickup truck into Nevada City to buy supplies and dynamite at Alpha Hardware for fighting

coffeepot to boil near a stream that may have sluiced down a fortune—or been a bust.

In modern times, too, miners hang around between shifts. So does Downieville's "neighborhood dog."

his way into his mountain. Blasting is a precise art form (pp. 108-09). Holes are drilled into the face of a mine tunnel in a carefully arranged pattern. The dynamite charges are packed into the holes, timed with something called a spitter cord, and then wired to explode sequentially from the inside of the pattern outward to prevent the arch of the tunnel from being fractured and thus being prone to collapse—each series making the hole bigger until it matches the tunnel.

The rock and rubble and mud are scooped out with an air-powered "mucker" (p. 109) in well-financed operations, or in an ore cart if there is no other way. The whole emptying process is called "mucking."

"We're not making millions every day," says Mason wryly, "we're spending thousands every day. There's a lot going in and very little coming out so far."

That is a common assessment up and down the Mother Lode, whether it's the man-versus-mountain contests around Alleghany or Al Farrell's professional

Newlyweds Debbie and Dick Claussen, at center, quaff beer with friends at Alleghany's Golden Eagle.

operation at Blazing Star Mine, 100 miles southeast.

They all feel they are going to "make it," but the enthusiasm seems akin to the Grantland Rice observation about the sports world: it matters not whether you win or lose, but how you play the game. It could be said that the importance of the game is greatest where the probability of a payoff is smallest. You frequently hear it said that only the long shots actually pay off. But the men who search—and spend—for gold come anyway.

Mason has spent about $40,000 so far to reopen the Irelan Mine, and expects to spend as much again before he starts producing gold. Much of the financing comes from his father back in Michigan, who, he says, "has had gold fever for years."

Boring into rock face deep inside the Blazing Star Mine, mine captain Mike Kizer, left, and Larry Hardie push compressed-air-driven rock drills into wall that may contain gold.

Farrell, 53, spent 16 years mining underground, has already survived a triple bypass heart operation and with his wife, June, owns more than a million shares of Troy Gold Industries Ltd., a Canadian-based mining company. He set up U.S. headquarters in Sacramento.

"My interest got piqued about five years ago, when I read that the Sierra Nevada was one of the greatest sources of gold left in the world today. So we looked at about 25 properties around here and we settled on the Blazing Star. The old records showed there was still some $6 million in gold—at 1974 prices—within the old workings. Everything we've researched so far has led us to believe there's an average of an ounce of gold in every ton of ore we have, and we'll be looking at estimated proven reserves of 250,000 tons of ore."

Farrell has already spent about $5.5 million to get his 55-man Blazing Star operation going, and financed it by selling stock in his company to about 4,400 shareholders so far. He calculates that the overall cost of taking an ounce of gold out of a ton of ore will still be only about $75 (the mine averages 240 tons per day).

"It's a long haul," he says, "not a quick buck. But it's one of the few things left in the world today where you can make it big."

Danny Mason agrees, but he also acknowledges one other motive: "The gold excited me, but the landscape was just beautiful. I came out here and fell in love with it. The trees, the foliage, everything was magnified. The rivers were crystal clear, and there were no beer cans floating around."

Mason fixed up a house near the Irelan, took a job at the nearby Oriental Mine to learn about mining, and brought in fruit trees to help the Irelan become self-sufficient. "We have apples and pears, plums, nectarines, cherries, peaches and two fig trees and a black walnut. We got 400 nectarines off one tree last year."

Miners organize to rescue miners

Lurking behind the thrill of gold and the adventure of the frontier is always the danger of accidents, injuries, collapsing mines. A dozen miners got together one evening at the Alleghany Youth Center to establish the Sierra Mine Rescue Team. They had received safety courses from federal officials in Alameda, near San Francisco, and are now forming two five-man emergency rescue units.

"It would be a hell of a thing to be trapped and have to wait for a guy from Alameda to come and rescue me," says Dick Claussen, a Gold Crown miner. "The first guy that gets to me from this team, I'm going to put my arms around him and give him a big kiss."

Mason, a helicopter crew mechanic in Vietnam, arranged a helicopter-rescue network that, if necessary, could deliver an injured miner to a major hospital in

Hardie and Kizer pack dynamite into rock wall. Above them are fuses leading to other dynamite charges.

Ready with his mucker, a miner waits outside tunnel entrance (at left) to the Blazing Star Mine.

Jimmie (left) and Jeff Russell sluice gravel in a riffle, but they are unlikely to find gold.

Sacramento in 25 minutes. Ruefully, he says: "It seems like you spend 50 percent of your time maintaining your machinery or your vehicles. A miner has to be a timberman, plumber, driller, blaster, carpenter, mechanic, engineer and a bit of a mountain man to sit up here in the wilderness. The winters are the roughest."

Most of the mines around Alleghany must shut down in the winter, for at the town's 4,500-foot elevation it is in the midst of California's snow belt. The winter loads the countryside with as much as 12 feet of snow and the isolated mines can be cut off from the rest of the world for days and weeks at a time. The miners stock up like squirrels with winter provisions, particularly high-protein food, coffee and, of course, beer. It is, in some respects, not much different from the lives led by the original settlers.

"It's a challenge," says Mason with a shrug. "I expect to start producing in the next two years. If things go well and my dad can generate some money, we'd like to put in a small mill and run some ore through. It's like a giant Easter-egg hunt. After a blast, you could be looking at a million dollars."

An unusually lucky day of river dredging brought forth these rewarding flecks of gold.

Cecil von Klein is 65 years old and has been mining since 1932. He is built like a slab of ore and is sitting in the middle of a small cabin overlooking the site of the Kate Hardy Mine, recalling gold strikes and near-strikes and overlooked strikes that he has seen or heard about in nearly 50 years in Ontario, British Columbia, the Yukon and California.

Asked about his past, he pulls out, surprisingly, a printed resumé of his career. It lists two pages of mines he has worked, as well as his service with the Canadian Army in World War II, when he was a member of the First Bomb Disposal Unit.

"Cecil gave me a job and a lot of education and taught me everything I know," says Jim Seltsam from Foxboro, Massachusetts, known around the Golden Eagle as "Handlebars" for his blond moustache. Handlebars, an airline mechanic for six years, is now an instructor for MESA (Mine Enforcement Safety Administration) and president of the Sierra Mine Rescue Team. He talks in a rush, and gives the impression he might be more at home scalping football tickets to a New England Patriots game. Until, that is, he starts to talk about mining and working underground.

He is walking into the Kate Hardy, a hard-rock gold mine just wide enough for the narrow ore cars to travel in and out on a miniature railroad. Scurrying along behind him is a tiny brown Yorkshire terrier, Li'l Han-

dlebars. The tunnel is damp and cool, and 1,000 feet of it is lit with a string of light bulbs.

"This winter," he says, "I'm going to do some geology studies myself. I've got four or five books just to get the basics down. I'm kind of personally involved, like family. Go around to anybody serious and you'll find their mine is part of them."

Mike Kizer (pp. 108-09) feels much the same way about it, and he is working in somebody else's mine, as mine captain at Al Farrell's Blazing Star.

"When you discover a new ore body, it's very exciting," he says, marching down the 1,500-foot-long circular incline that he is helping to bore into the Blazing Star vein and four other veins that lie alongside. It is wet and there is almost a fog in the air as he tramps down the slope that is lit only by the miner's lamp he wears on his blue hard hat.

Vocal exercises with a mucking machine

"I studied to be an opera singer and sang around Stockton and San Francisco," he recalls. "Then I used to sing when I was driving the mucking machine down here in the mine every day. I wore ear protection and the machine was terribly loud anyways, so I tried to sing loud enough that I could hear myself."

Kizer, 37, doesn't really expect to get rich from gold mines, although he does own some shares in Farrell's mining operations and follows their progress carefully. "E. F. Hutton called this morning, to say it was up a quarter," he reports incongruously as he steps aside to let a giant yellow mucking machine charge by.

He and his second wife, Nancy, a pianist who was formerly his accompanist, have just moved into a new house near the site of the Blazing Star. He had five children during his first marriage and added Nancy's two children to the entourage. He is thoughtful about mining safety and contends it has changed a lot in the past 20 years, thanks in part to stiff government regulations. Many mining men are unhappy about the regulations, which they feel are designed for large-scale operations rather than the kind that are generally under way today in the Mother Lode.

Kizer doesn't grumble, though. He says that while mining may not be "the safest profession in the world today," it is significantly safer and cleaner than in the past. "We drill with water now," Kizer explains, as an illustration. "We don't make any dust and a miner's lungs don't get 'rocked up' after 30 years down here, the way they used to."

His boss, Al Farrell, is philosophical about government regulations. "I think they may have gone too far," he says of the environmentalists, "but the initial impact was great. We were all guilty at one time or another of scarring the landscape, carelessly or thought-

The Russells, working in the cold streamwater, struggle to get their gold dredge to function.

New gold rush to the Mother Lode

Piled up on display at the Old San Francisco Mint are some 70 bars, 400 ounces each, of California gold.

lessly. The environmentalists made us all aware that we need to look after our world. It's no horrendous cost for us to operate environmentally. Any guy who says he can't go into mining because of all the regulations is a defeatist," he snaps.

It is not hard to sense that Farrell is a victim of his own success as he talks about life underground while sitting in his carpeted, air-conditioned office in Sacramento, where a jackhammer stands silent in the corner, reduced to service as an office ornament. Kizer is "down there" every day, while Farrell is mostly worrying about shareholders, capital investment and government regulations.

"You have to watch every dollar, make every cent count, be tough on your employees and keep them working," he says. "It's just like running a grocery store." He feels that a mine like the Blazing Star requires an investment of $5-to-6 million before gold is produced, and he recognizes that investments of that size are not readily attainable. Farrell says he wouldn't advise anyone to get into the business without having a "good geologist, a good engineer, or somebody who has had years in mining."

Dredging with "floating vacuum cleaners"

Yet the rivers and streams of the Mother Lode are crowded with amateur weekend prospectors, with their pans or elaborate gasoline-powered dredges. In the first ten months of 1979, the state of California issued 5,043 permits for dredges, 1,285 more than a year earlier. The dredges are like floating vacuum cleaners. A hose 2½-to-8 inches in diameter sucks gravel from the riverbed and empties a hole down to bedrock where, it is hoped, gold has settled. The whole mixture is pulled up, and passed over a riffled table that catches the heavy gold. The gravel is poured back into the river. A dredge is about six feet long and can weigh up to 750 pounds and cost anywhere from $350 to $3,700.

Jim Russell stood beside his dredge (p. 111), looking like an assembly-line worker caught in a flood. He was wearing a somewhat tattered wet suit and was waist deep in the clear, rushing waters of the North Fork of the Yuba River. His dredge was spewing water and gravel before an expectant audience that included Jackie Russell, seven children and Jeep, a brown-and-white springer spaniel.

"We got a little," Russell yelled above the clatter of the engine. "Few days ago, we got an eight-ouncer."

The eight-ouncer was a chunk of quartz about the size of a baseball that appeared to be studded with about one ounce of pure gold. The gold looked like it had been driven into the quartz with a hammer.

"People will hear about that and there will be even more of them coming up," he said, sifting the bigger

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rocks as they tumbled down the dredge with a clatter.

The temperature in the water is about 60 degrees, but Russell says that in a wet suit he can work in the river almost all day: "I've been up here when the water temperature was 34 degrees and you could only work a little while before you had to get out. You only do that if you really have gold fever, or you're hungry."

Jackie Russell sits on a rock, surrounded by the family—"his, mine and ours"—and watches her husband. "This is my first time on the river," she says, "and it is worth every day of it. Brings the family together. We've always wanted to have a farm. This is our farm."

Russell clambers out of the river. "You don't really do this for the money. It's kind of an accomplishment to find some gold. But it's great to be with the kids. There aren't any outside influences up here, so we are all pulling together instead of being pulled apart."

Upstream a few miles, where the river passes through Downieville, another miner is crouched on the rocks by the water, pan in hand. With a rowing motion, he lets the water gradually skim off the gravel and sand while the gold, if any, sinks to the bottom of the pan. It's half-filled with black sand he has panned earlier. He thinks it may hold some gold he has missed. Finally, all the sand is gone. There is no gold.

"I was just panning a wish," he sighs.

Gold panners Bill Smith (left), and Bob Underhill try their luck on Yuba River at Downieville.

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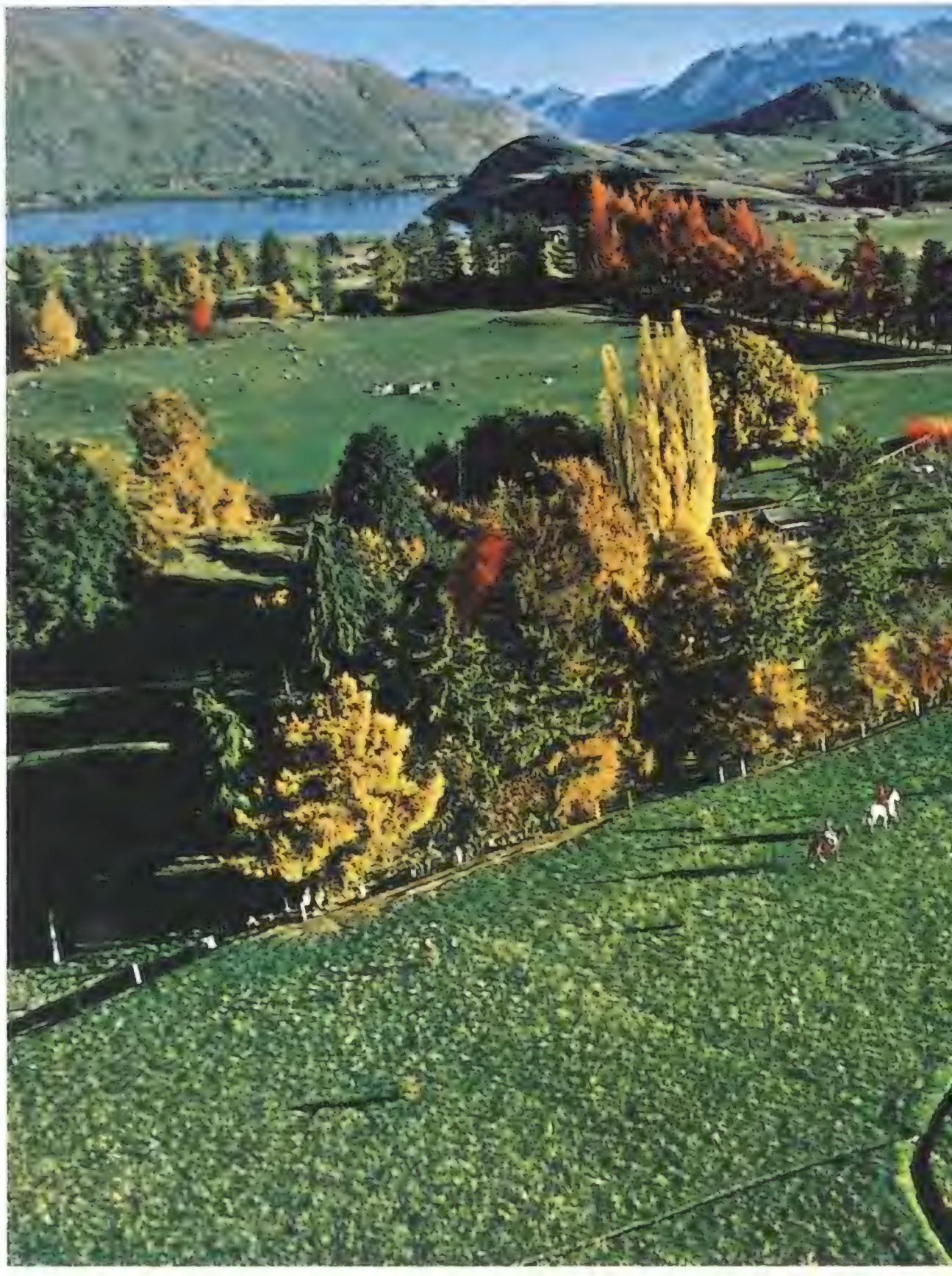
The South Pacific. If you've seen



If you've been everywhere, this was worth waiting for. If you've been nowhere, this feels like everywhere. The South Pacific is so much more than you bargained for. Beyond the tropical islands you've dreamed about, there are other islands. Touch a little of each and you've taken the trip of a lifetime.

New Zealand. The World's Great Surprise Package. Begin on the North Island, in Auckland. Drive up through the lush Henderson Valley. This is the wine country, and it's perfect for your first taste of New Zealand. Stop for lunch at a tavern that plunks you into Europe. Till you get the bill. *$8. For two!*

Travel through farmland, cattle ranches and meadows full of sheep, till you reach the Tasman Sea. Below you, miles of black sand beach stretch out as far as the eye can see. Do it all in a day and return in time to watch the sun set on Auckland Harbor.

Caving And Carving. Drive South, and your first stop is the Waitomo Caves. Now, in a small boat, steer your way into a grotto. Shhh. Above you the glow worms cling to the cave ceiling, lighting your way like millions of stars. You want to shout. But don't. If you do, the lights go off.

Next stop, Rotorua. The earth's crust is so thin here that steam breaks through everywhere. Geysers shoot hundreds of feet into the air. And mud pools bubble in the ground. You'll meet the Maoris, New Zealand's native people, here. You'll see how they've harnessed the steam to pressure cook their meals, and you'll watch master woodcarvers teach a lost art to a new generation.

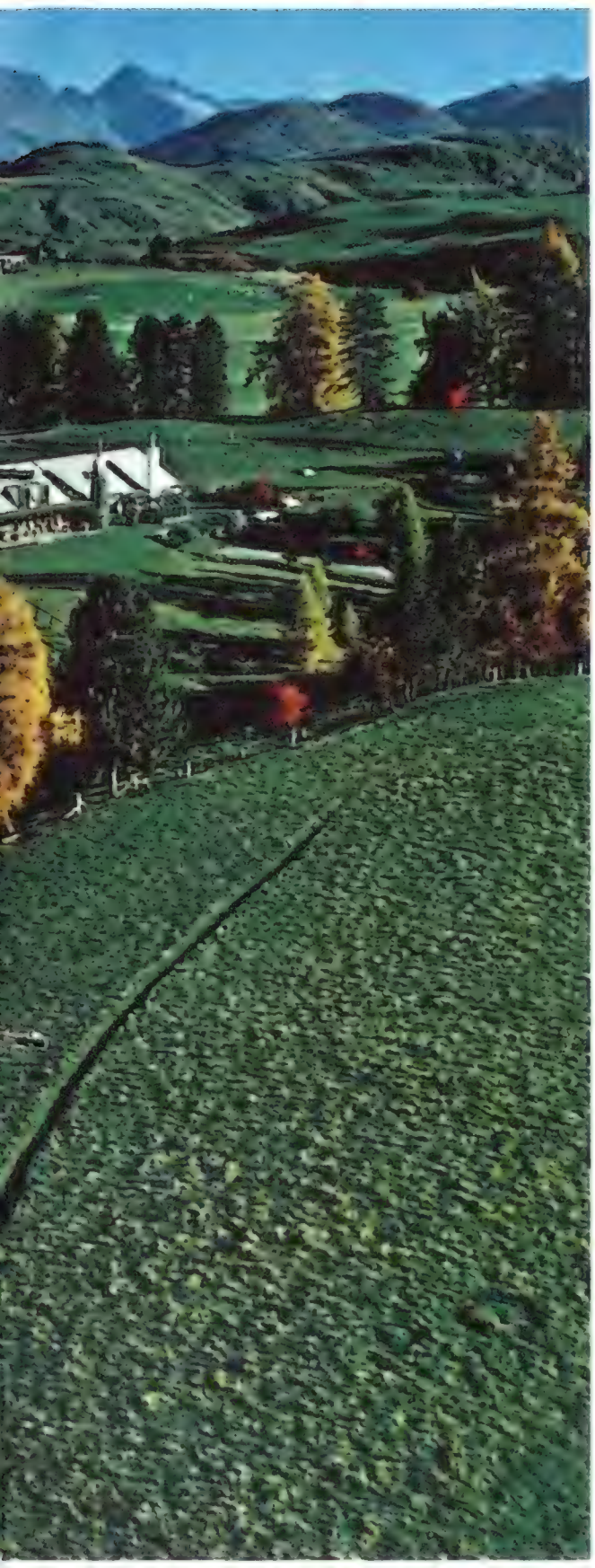
You can't resist buying their work.

Finish the day in a steamy mineral pool, dreaming about tomorrow.

On To England. Bright and early, fly across Cook Strait to the South Island.

Land in Christchurch and step into England. Paddle a tiny boat along the river Avon. Have a picnic on the bank under the willows and watch a rugby match in the distance. Spend an

-one island, you haven't seen 'em all.

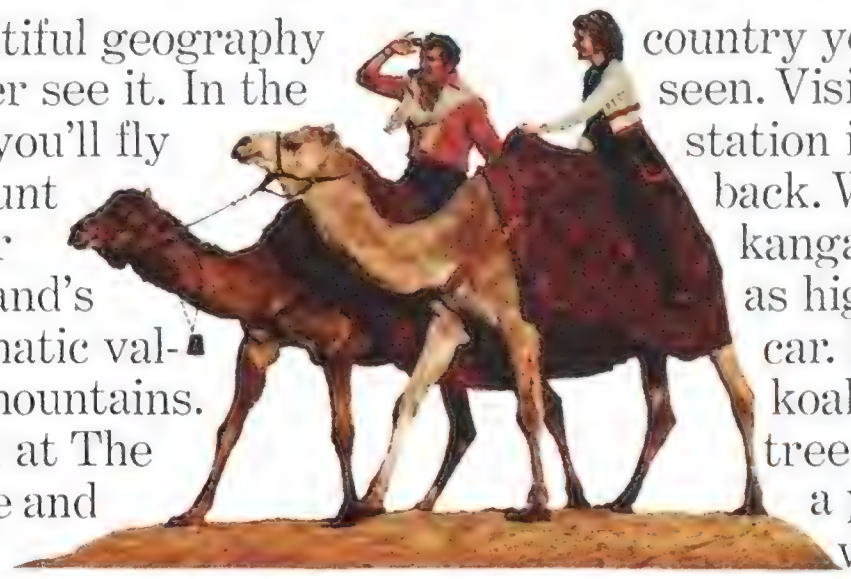


afternoon driving through flowers. They're everywhere.

The city gives prizes for landscaping, to homes, streets, even factories. And the people are as warm and friendly as their gardens.

Stop at one of the pubs. Chances are, someone will buy you a beer and bend your ear.

Up Like An Eagle. You're about to see the world's most beautiful geography as few ever see it. In the morning, you'll fly out to Mount Cook, over New Zealand's most dramatic valleys and mountains.



Lunch at The Hermitage and then fly up to a starchy white glacier, and see what it's like to land on skis. Later, watch the sun turn the mountains pink from a lovely room that reminds you of Switzerland, at *one-half* the price.

In the morning, you're off to Queenstown, ready to try "the most beautiful flight in the world." Twenty minutes in the air brings you to the world's most stunning sight. Milford Sound. Take a cruise between towering mountain walls through a fjord that impresses even the Norwegians.

Beyond is the Tasman Sea. And tomorrow you'll cross it to Australia.

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air new zealand

By Noel D. Vietmeyer

Rare narwhals inspired the myth of the unicorn

This little-known and elusive Arctic whale bears a single protruding spiral tooth long believed to have magical properties

The summer storm slashed out of the nearby Arctic so swiftly and violently that Martin Frobisher's three fragile ships were almost pulverized. With kneeling crews thanking God for deliverance, the trio of vessels limped to shelter in a vast, ice-spattered inlet on Baffin Island's southeastern corner. It was July 1577, and Frobisher was to get little farther in his search for an Atlantic-to-Pacific passage across the top of North America. The voyage so far had yielded few exciting discoveries, but here, on a small island in their inlet haven (now known as Frobisher Bay), some crew members found "a great dead fish." The fish was unlike any previously documented. It was "round like to a porpoise, being about twelve feet long . . . having a horn of two yards long growing out of the snout or nostrils."

The horn was of such pure ivory, so straight, and of such a perfectly tapered and spiraled shape that Frobisher instinctively knew he had made a historic discovery: a marine species of unicorn.

It was widely believed that every terrestrial creature had to be balanced by a marine counterpart,

This 17th-century Danish throne of unicorn horns, or narwhal tusks, was more splendid than Solomon's ivory and gold throne, according to Danish bishop.

A spiral-toothed male narwhal and toothless female ply Arctic waters in a painting by Richard Ellis. Male's single spectacular tooth may extend eight feet.

and any doubts were quickly dispelled when the crew performed the standard, time-honored test for fraudulent unicorn horns. They put some supposedly poisonous spiders into its hollow core, as a true unicorn horn was the absolute antidote for any poison. Indeed, the test turned out as the naive, aging Martin Frobisher undoubtedly hoped in his eagerness to laud the newly discovered frozen wastelands. The spiders died and validated the horn. "This horn . . . may truly be thought to be the sea-unicorn," he wrote, and later he proudly presented the gleaming ivory lance to Queen Elizabeth.

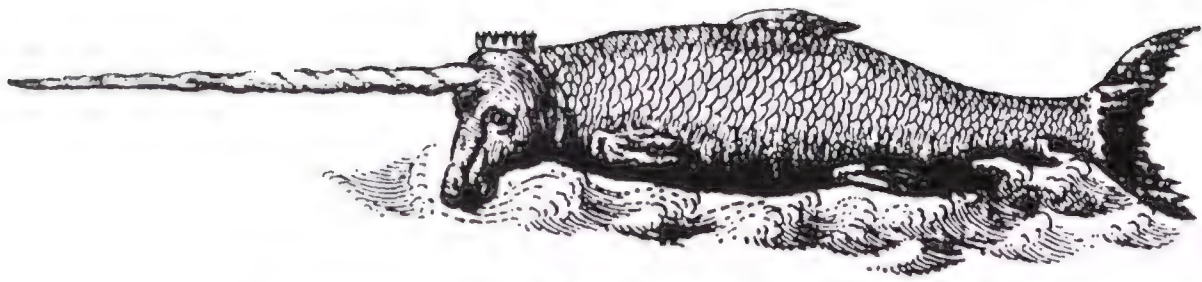
Thus Frobisher reported to Europe the existence of the narwhal, a dolphin-sized whale still extant, although it remains almost as little known in our time as in Frobisher's. Even today, this whale's almost mythical appearance and remoteness can inspire our imaginations as powerfully as the Elizabethans'.

Although perhaps from 20,000 to 30,000 narwhals (often pronounced nar-whales) still cruise Arctic waters, their biology, life history and habits remain obscure to most of us. Narwhals have seldom been studied in detail, and they have never been successfully held in captivity for more than a few months. Reclusive animals, they inhabit remote and frigid Canadian, Greenland and Soviet coasts far from shipping lanes and the usual whaling grounds, so that even dead narwhals are rarely seen.

Mystery still enshrouds them. We do know, of course, that narwhals are not fish but air-breathing mammals and that no horn sprouts from their forehead. Instead, adult males normally have one enormous left tooth in the upper jaw. Growing continuously throughout the animal's life, it stabs through the upper lip, emerging as a shaft of ivory projecting as far as eight feet from the head. Strangely, it is usually only the male's tooth that develops. Though all adult narwhals have two teeth, those of the female and the right tooth of the male remain embedded in the jawbone.

Few, if any, animal products have ever inspired

Noel D. Vietmeyer, a frequent contributor, wrote on quest for perennial corn in December 1979 issue.



Sea unicorn, in 1694 French book on pharmacy, is horned fish; narwhal teeth were powdered for drugs.

Man's imagination so profoundly as these whale teeth. The tusks had been carried to Europe by Viking sea rovers several centuries before Frobisher's discovery, but whence—and from what—they came had been kept secret. Mirrored in mystery as they were, their impact on European culture was dramatic. For around these horns developed the myth of the unicorn, the noblest of animals, the beast that transfixed the mind of the Middle Ages. Pondering what kind of creature could support a heavy ivory pole on its head, Europeans accepted the idea of the single-horned horse. It had been thought of far earlier, but the gleaming, almost mystical ivory tapers brought back by the Vikings gave the unicorn an aura of substance and reality. The animal must be somewhere on Earth or its horn couldn't exist!

Narwhals produce the only spiraled teeth in the world, and almost all unicorn depictions—even most of the earliest—incorporate their tusks. In medieval minds the unicorn took shape from a mélange of parts, evolving rearwards from the narwhal "horn." In one version, its head, neck and body were from a horse, its legs from a deer and its tail from a lion. That it was a real terrestrial animal was not doubted; it lived somewhere off in Asia or Africa. Of course it took faith to believe in such an animal, but few had seen an elephant or rhinoceros either; to believe in them was also an act of faith.

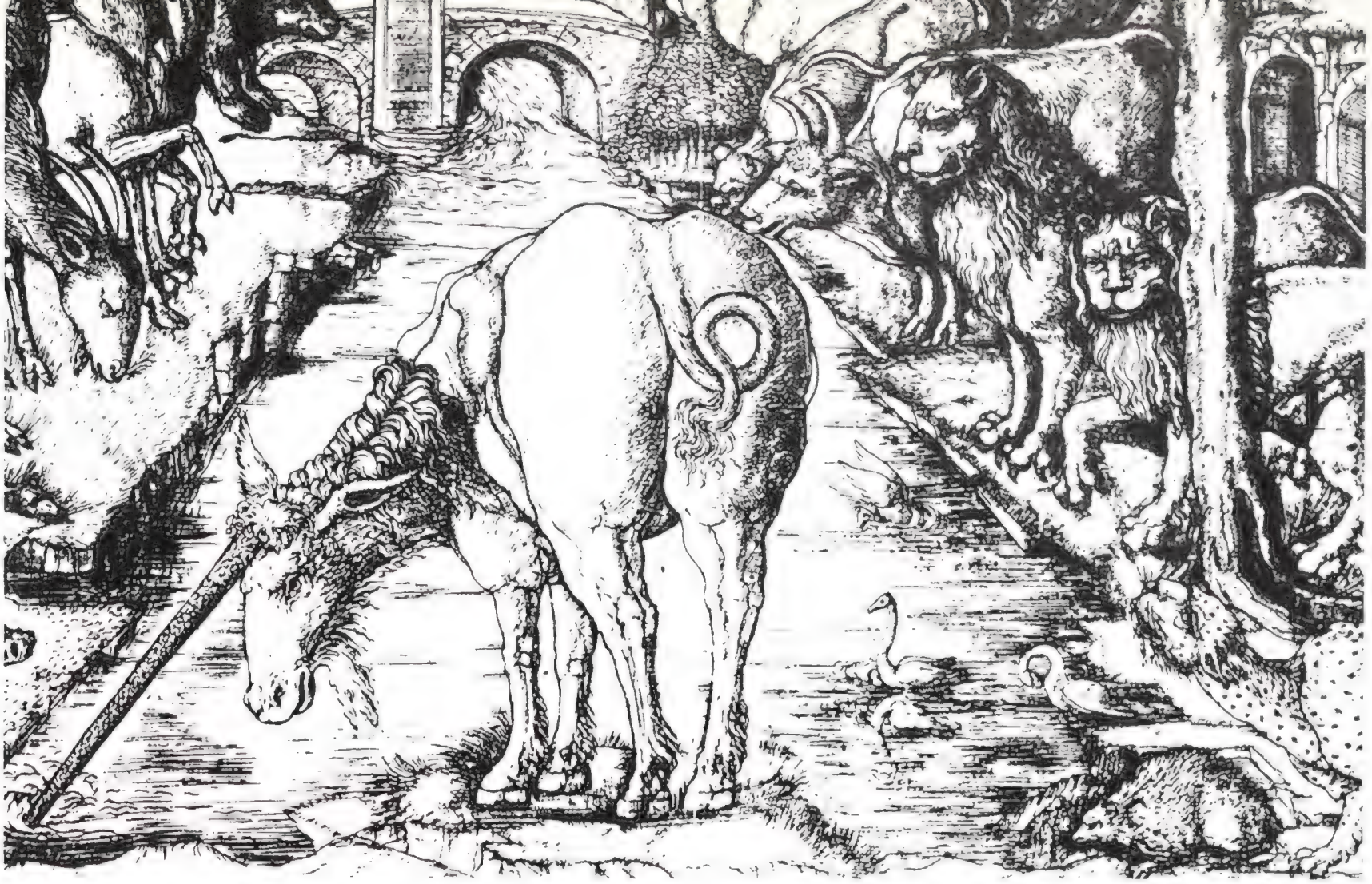
Although it now seems like a child's puzzle put together wrongly, the unicorn was held in reverence. In human minds it was transmogrified into a perfectly functioning animal, so strong and fierce as to deter the bravest soldier; so tireless and fleet that whole parties of hunters couldn't hope to ensnare it.

It had, however, a singular and most penetrating vulnerability: it was irresistibly attracted to virgins. Seeing a virgin seated nearby, the unicorn would approach meekly, lay its horn in her lap and fall asleep. Only then could it be captured. This became an allegory of Christ and the Virgin Mary.

With the rampant superstition of the times, medieval Europe endowed these whale teeth with the power to heal the sick, to prevent disease and to counter the effects of poison. Goblets, cups and bowls were carved from narwhal tusks; poisoned drink touching them would "froth darkly and be cleansed."

The intrigue and terror of those days can be sensed from the number of aristocrats who owned narwhal

In Raphael painting, *Lady With a Unicorn,* toy-sized animal reflects one conception of beast's anatomy.



Unicorn purifies water with its horn, as other animals wait to drink, in this 16th-century copper engraving.

Anatomy of beast here is based on ancient Greek idea of Indian unicorn having the body of a wild ass.

tusks or articles made from them; princes, queens, emperors, dukes and popes treasured them as if their lives depended on them. The owners included the Duke of Berry, a doge of Venice, Philip II of Spain, Francis I (his need of one is understandable—the entourage of his wife, Catherine de Médicis, is credited with bringing the art of poisoning to France), Pope Clement VII, the Duke of Burgundy, a king of Poland and Mary Queen of Scots.

Although the royal users of unicorn horns continued to experience their share of sudden and inexplicable deaths, the horn retained its prestige as a poison antidote and its market value remained high. Four centuries ago, Holy Roman Emperor Charles V gave the Margrave of Bayreuth two unicorn horns as payment for a debt equal to a million dollars in today's currency. Frederick III, King of Denmark, had the most extensive collection. He built from unicorn horns a throne that became one of the wonders of Europe and was long used as Denmark's coronation chair. The legs, arms and supporting pieces were made of narwhal tusks (p. 119).

Scotland early adopted the unicorn as its symbol. It seems possible that the idea was generated by tusks removed from narwhals washed ashore on northerly Scottish coasts. When King James VI succeeded Queen Elizabeth to the throne of England, he brought Scotland's unicorn with him. Rudely bumping the red dragon of Wales from the royal coat of arms, he replaced it with a rampant unicorn, posed fiercely and proudly flaunting its narwhal tusk. It remains a symbol of Britain's royal family.

Initially, narwhal tusks had competition as unicorn horns from mammoth bones unearthed in Central Europe, walrus tusks (artificially straightened), rhinoceros horns, pieces of petrified wood and even stalactites. But by the Middle Ages the narwhal tusk had triumphed over all competitors.

The trade was several times shaken to its backbone when scholars began to peel away the mystery and expose the flesh of truth. But initially they, like Martin Frobisher, attributed the unicorn horn to a fish with a horn, not to an air-breathing mammal with a long tooth. In 1555 Olaus Magnus, archbishop of Uppsala, wrote, "The monoceros [unicorn] is a sea-monster that has in its brow a very large horn where with it can pierce and wreck vessels and destroy many men." In 1569 Goropius of Antwerp said, "I sometimes suspect that this is the horn of some fish." And in 1558 Amatus Lusitanus—a bit closer to the truth—wrote that some fraudulent merchants "sell whale bones in place of unicorns' horns."

But the unicorn, slow to evolve and persisting for centuries, was a long time in dying. It was one of the few imaginary animals among its contemporaries—the griffin, the dragon and the werewolf—to survive into

How the unicorn got its horn

the Renaissance. Even though scholars had exposed the unicorn racket by the mid-1600s, the trade and the legend continued on for more than 100 years. Narwhal tusks had cast their spell. That the horns were nothing more than teeth from an animal's mouth was unthinkable. And perhaps that is understandable: even today, a tusked whale seems not much less likely than a horned horse.

Although the 1600s brought the enlightenment that finally shattered the religious mystique of the unicorn, it was a legend that continued to haunt the human mind, and its horn persisted as a medicinal ingredient. Crushed narwhal tusk was commonly used in the practice of the most prestigious and expensive physicians to create perspiration and thus "expel ill vapours by sweate." It also was reputed to strengthen the heart and to cure epilepsy. The valued powder remained on a British list of effective drugs into the 18th century.

By that time the Swedish naturalist Linnaeus had given the narwhal its scientific name *Monodon monoceros* (one-tooth, one-horn) and, as waves of scientific knowledge washed away European ignorance, the demand for narwhal tusks declined. We now realize that the unicorn horn is, indeed, nothing more than a whale's tooth, but this doesn't mean that all the mystery has vanished. Far from it. Although whales in general have captured vast public sympathy, the narwhal, or sea unicorn—perhaps the most bizarre whale of all—remains little known to the general public, or even to most concerned conservationists. It is the narwhal itself that is now mysterious and provocative. For example, what could the male's six-to-eight-foot tooth possibly be used for? That it is at times an awkward encumbrance is suggested by the occasional narwhals found with their tusks snapped off, probably when struck against pack ice or the sea bottom.

Narwhals were hunted by Arctic whalers who sold the unicorn horns, worth at least their weight in gold.

A tooth as an ice pick or for courtship

Cetologists do not know what is the tusk's utility. Because narwhals are gregarious, living in small pods of about ten, it has been suggested that the male uses its tusk to prod fractious members back into the group. This could be useful indeed when narwhals migrate, as they do in giant pods of several thousands. With fluked tails powering them swiftly along, they retreat southward in the fall, pressed by advancing ice, and return to high latitudes with the spring melt. Around the turn of this century, North Pole explorer Robert E. Peary saw migrating narwhals "dashing to windward, their long white horns flashing out of the water in regular cadence."

But this shepherding explanation is probably not the true one, and other researchers have speculated that the tusk may be used to smash through thin ice from below. Unlike other species of whales, the narwhal is too small to swim long distances underwater; it needs to breathe too often. In the event of a rapid freeze, narwhals may get cut off from escape to the open sea. Frobisher's sea unicorn probably died this way, caught beneath the ice. At Disko Bay in west Greenland, a Danish scientist in 1915 witnessed several groups, totaling hundreds of narwhals, trapped by the ice. As the ice thickened, the open holes became smaller and smaller until they were choked with jostling, one-to-two-ton narwhals gasping desperately, with the males' tusks an ivory forest waving over the ice.

But it doesn't seem reasonable to conclude that the tusk is a giant ice pick. Nor is it used for skewering food, mainly squid, cod and shrimp. Cetologists conclude, almost by default, that the tusk is nothing more than a secondary sexual feature that may be bran-

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dished by the male in aggressive display, useful only for keeping rival males away.

Our ignorance of the narwhal tusk's purpose is indicative of the obscurity that surrounds this animal. Although in recent years the preservation and study of wildlife, including whales, has gripped the public's attention, few persons even recognize the narwhal's name. Only a handful of biologists have ever published research on the species. A comprehensive investigation of the animal's behavior and natural history has only recently been made. One treatise still widely referred to by scientists was written in 1822 by William Scoresby jr., an English whaling captain.

Nevertheless, when generations in the far future look back on Western civilization, the interesting thing will be not the narwhal's reality, but the intense, romantic myths its tusk once fostered in the minds of men, and the powers it was accorded in the religion of medieval Europe, the protection of endangered monarchs and the medicine of that superstitious age.

Perhaps one day soon television will treat us to a documentary by adventurous scuba divers investigating the narwhal. But until we can at least know it better, this mysterious sea creature will continue to haunt mankind's imagination as it has since centuries before Martin Frobisher's discovery.

School of male narwhals in Prince Regent Inlet, in Canada's Northwest Territories, was photographed from helicopter by a member of the Arctic Biological Station. Narwhals frequently swim in small groups.

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Caldwell, Kansas, in 1880s was booming cow town that honored one marshal, then applauded his killing when he held up a bank in another town.

By Joseph W. Snell

Kansas cow-town life was in part a comedy of errors

The Wild West was tamed by lawmen who robbed banks and gunfighters who could not always shoot straight

Like most boys in Topeka in the 1930s, I could draw like lightning, shoot straight and ride like the wind, emulating the gunfighters and peace officers who once held sway in the cow towns of Kansas. Unlike most of my friends, however, I turned to a profession in history, which gave me the opportunity to study the real West. It wasn't long before I discovered that my heroes in their white hats had more than a few warts.

In fact, many of the best peace officers of the real West rode on both sides of the fence dividing right from wrong. Little-known lawmen like Billy Brooks (p. 136) or Ben Daniels (p. 138) and even more prominent peace officers like Wyatt Earp occasionally strayed onto the "owl hoot trail," as my boyhood lingo called outlawry. Take, for instance, one of the finest marshals the cow town of Caldwell, Kansas, ever had—Henry Newton Brown.

Mr. Brown appeared in the summer of 1882 and was shortly appointed assistant city marshal to serve under B. P. "Bat" Carr, also recently appointed. Brown, the local newspaper stated, was formerly of Tascosa, Texas. He was a young man "who bears an excellent reputation, and although he has acted in similar capacities for several years, has never acquired any of those habits which some seem to think are absolutely necessary to make an officer popular with the 'boys.'" The paper continued: "We have not the least doubt but he will give entire satisfaction. . . ."

The newspaper, in its enthusiasm, failed to mention that Assistant Marshal Brown was a former rider with, and companion of, Henry McCarty alias William Antrim alias William Bonney alias Billy the Kid.

In Caldwell, however, Brown behaved himself and became a respected peace

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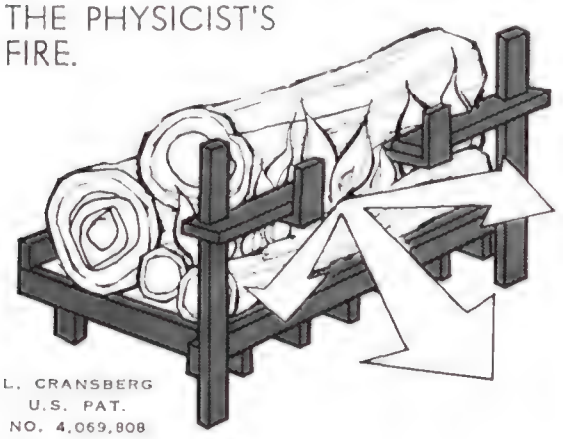

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Photographed before lynching, four Medicine Lodge bank robbers are (left to right): John Wesley, Marshal Henry Brown, Billy Smith and Ben Wheeler.

officer. Toward the end of 1882 Marshal Carr resigned and Brown was appointed to the top position. On New Year's Day, 1883, the citizens of Caldwell presented Marshal Brown with a fine engraved and gold-mounted rifle, a Winchester '73, which bore this sentiment on a small plaque on the black walnut stock: "Presented to H. N. Brown by his many friends, as a reward for the efficient services rendered the citizens of Caldwell."

Needless to say, Henry Brown was extremely proud of the gift and carried it when trouble was brewing. On December 15, 1883, the weapon was used to dispatch a hardcase gambler named Newt Boyce who seemed intent on shooting down the members of the city police force. Brown's two shots rang true and the gambler was soon on his way back to Texas, traveling in a supine position.

March 1884 saw Henry Brown take the hand of sweet Maude Levagood in marriage, buy a home and settle down. Caldwell couldn't have been more pleased.

The newly married marshal, maybe learning that it took a good deal of money to support a wife, in late April requested permission to go with his assistant, Ben Wheeler, into the Indian Territory after a murderer on whose head a reward of $1,200 rested. They could use the money.

Sometime after Brown and Wheeler rode out of Caldwell, they were joined by two cowboys named William Smith and John Wesley. The four soon turned up in Medicine Lodge—which was in Kansas, not the Territory.

Their mission was not to capture a murderer but to rob a bank. The attempt failed. The robbers were captured and placed in the local calaboose. Not long

Joseph W. Snell, executive director of the Kansas State Historical Society, is author of Why the West Was Wild.

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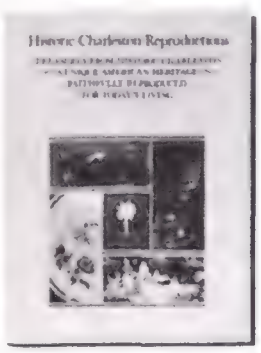

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afterward, an angry mob gathered and things looked black.

Brown requested and was given permission to write his wife of a month to give her instructions about his estate. "I will send you all of my things, and you can sell them, but keep the Winchester," he stated. "This is hard for me to write . . . but, it was all for you, my sweet wife, and for the love I have for you."

Hardly had Brown completed his letter than the mob rushed the jail to take the four. In the gang's attempt to escape, Wheeler, Smith and Wesley were caught and strung up from an elm east of town. Marshal Brown was shot and killed.

Shoot-outs, of course, were the stock-in-trade of frontier gunfighters, although the violent showdowns of history were not always as well cast as in the movies. Sometimes the real heroes could not even shoot straight. A notorious example was the Dodge City shoot-out between two frontiersmen, Levi Richardson and Cockeyed Frank Loving. The affair took place in the cow town's famous Long Branch saloon. The date was April 5, 1879.

Loving, a gambler, was recognized as being "cool and desperate . . . when he has a killing on hand." Though he did not bear a reputation for being a rowdy, he was believed to have true grit when the chips were down.

Wyatt Earp wasn't Dodge City marshal, as he later claimed, but a deputy.

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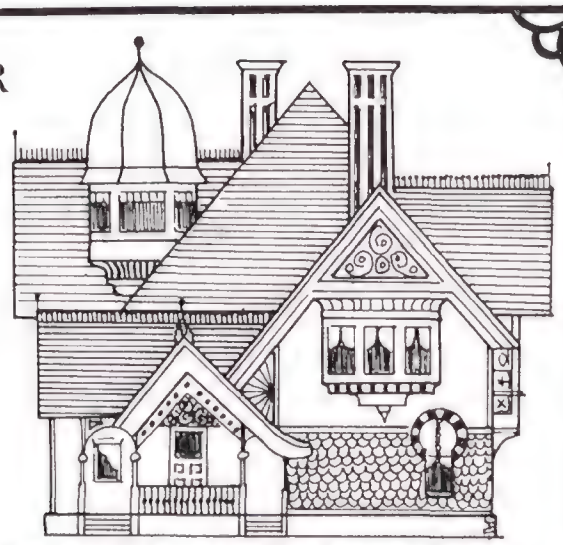

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Bat Masterson, a county sheriff, was also a dedicated practical jokester.

Richardson was a young man, a freighter by occupation, who came from Wisconsin but had lived on the frontier long enough to become well respected for his strength, bravery and industrious attributes. Some folks did recognize, though, that Levi was a bit reckless.

Naturally, the fight was over a woman.

Richardson was in the Long Branch and starting to leave when Loving came in. Sitting at the gambling table, Loving was joined by Richardson. Unknown words passed between the two and each stood up.

Loving spoke again: "If you have anything to say about me, why don't you come and say it to my face like a gentleman, and not to my back, you damn son of a bitch."

"You wouldn't fight anything, you damn . . . ." said Richardson.

"Try me and see!"

Richardson pulled his gun and so did Cockeyed Frank Loving.

They chased each other around a billiard table and nearby stove, their guns exploding. Around and around they went, Loving emptying all six chambers and Richardson five. The smoke was thick; it was difficult to see.

Richardson finally slumped near the table, wounded three times. He died

shortly after. Loving was barely scratched.

These men were no greenhorns and Richardson was known as a crack shot. But eleven rounds were fired and only three took effect though the weapons were only inches apart!

Even the great "Bat" Masterson (whose first name was really Bartholomew) was less than perfection.

Bat, who had moved from Dodge City to Tombstone, Arizona, once returned to Dodge on an unusual mission. His brother Jim was owner of a Dodge City saloon called the Lady Gay. Jim had a falling-out with his bartender, a man named Al Updegraff and, when it appeared that a showdown with Updegraff was inevitable, Jim sent for Bat.

Naturally, the first thing Bat did on arriving in Dodge was to have a drink at a local saloon. As he leaned against the bar, he saw Updegraff and a friend outside. Bat hailed them: "I have come over a thousand miles to settle this. I know you are heeled [armed], now fight."

The other side took little time in accepting Bat's offer and soon lead pellets were flying across Front Street, slamming into saloons, the drugstore and other business houses. Bat lay down behind a railroad embankment and was treated to a mouthful of dust by a low flying bullet. One of his shots found Al Updegraff—and Updegraff lived to talk about it. Bat and instigator Jim Masterson were captured

Jim Masterson was a lawman in Kansas and Oklahoma, dying broke at age 40.

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by the police, taken to court where they were fined ten dollars and costs and told to leave town—an order that they promptly obeyed.

Bat was a well-liked frontier personality who thirsted after life and enjoyed himself to the fullest. He was an outstanding sportsman who sponsored exhibitions of fisticuffs. He lived and loved with the best, and when things got a little dull in Dodge City he would invent some excitement.

One favorite trick was something the local residents called the Indian act.

A necessary ingredient was an Eastern tenderfoot who believed the West was exactly like that depicted in the lurid writings of penny-dreadful authors. The greenhorn was invited by local residents to take a ride out on the prairie, perhaps to hunt for antelope. Naturally the Easterner accepted. What he didn't know was that another group of locals remained behind to dress in Indian costume, some of which had been captured by Bat himself at the battle of Adobe Walls in 1874.

As the hunting party proceeded on its way and finally cleared the horizon out of sight of Dodge, the "Indians" attacked.

Billy Brooks was marshal of Newton, 1872; hanged as horse thief, 1874.

Hearing the blood-curdling war whoops and seeing the fantastically dressed warriors, the Easterner believed that his fate was sealed. Egged on by his companions, he more often than not hightailed it into Dodge and caught the next train back home. The natives, of course, thought the game hilarious.

On one occasion Bat and some of his friends concocted a more elaborate play, which was duly reported in one of the cow-town newspapers.

It all began when an Eastern physician wrote to some of the citizens of Dodge City asking if the town would be fertile ground for his science, which turned out to be phrenology and the treatment of certain diseases that the newspaper was too modest to describe.

The doctor was encouraged to come and he shortly did. "He was what the boys would call a 'daisy,' " a Dodge City paper said of him—meaning that he did not, by his general appearance, give the impression that he was "posted on the modes and costumes that prevail" in cow towns such as Dodge City. Upon his arrival, the doctor proposed to rent a hall where he could discourse upon his expertise. The Lady Gay was duly engaged for the evening and Bat Masterson was chosen to preside as the master of ceremonies for the event.

Bat Masterson "defends" a daisy

The good doctor began his address, as many speakers do, by stating that he had not planned to deliver a lecture, but "at the earnest solicitation of numerous prominent. . . ."

"You lie!" yelled a fractious voice from the audience.

Chairman Masterson rose, restored order and the orator commenced again. He was soon interrupted by another insult. Let the *Ford County Globe* of Dodge City report what transpired next:

"Again the Doctor proceeded and was just wading deep into a scientific problem when a loud, profane and fiendish yell from Luke McGlue [a character invented by Dodgeites to entertain tenderfeet] turned the house into an uproar of excitement, and all efforts to restore order were in vain.

"Just at this critical moment a southside exhorter with one eye in a sling made an effort to drag the orator from the stand, whereupon Chairman Masterson

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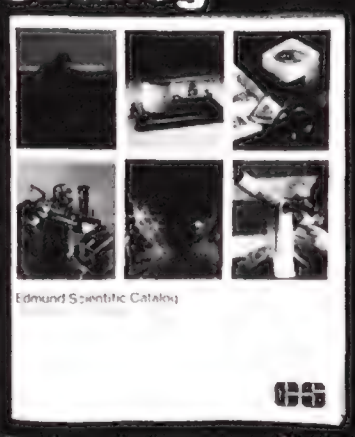

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Ben Daniels, a Wyoming mule thief, was later assistant marshal in Dodge City.

drew from beneath his coat-tails a Colt's improved, nickel plated, size 44 shooting instrument and formed himself in a hollow square in front of the horrified Doctor, determined to defend or die! A crash was heard—the lamps went out instantaneously, windows were smashed, missiles flew through the darkness, the air was filled with demoniac yells and shooting commenced in rapid succession. . . .

"It was only after all the ammunition in the house was expended that the murderous carnival ceased and a lamp was lighted by which to remove the dead and wounded. But the dead and wounded had ere this time escaped and even the Doctor was nowhere to be found. Search was made, and at last he was discovered coiled up under the speaker's stand with his hands over his marble features and a ghastly bullet hole through the crown of his hat.

"The meeting adjourned sine die."

Dan Jones, a deputy marshal of Caldwell during its most turbulent years, came as close to fitting 20th-century America's image of the omnipotent frontiersman as anyone. On the last day of 1878 Jones was riding his horse into the prairie to check on a herd of cattle when the animal stumbled, throwing the marshal to the ground with such force that his leg was broken. Though the faithful horse remained nearby, Jones was unable to remount. He was miles from the nearest signs of civilization.

Though the broken leg was terribly painful, the marshal tied it to his good leg and began a long and arduous crawl toward a ranch where he knew he could find help. More than thirty hours later he topped a ridge, saw the ranch house and began waving his hat. Fortunately the keeper of the ranch saw him and rushed to his rescue. Without food for a day and a half, crawling on frozen ground, Jones drew on the pluck we associate with all Westerners and saved himself. Even the newspapers of the day commented on his unusual feat.

A deputy marshal indisposed

Unfortunately, the next adventure that befell the marshal and gained him space in the local press was less heroic. "That 'mistakes occur in the best of regulated families,' " the Caldwell *Post* reported on September 25, 1879, "was only verified by the singular and unexpected incarceration and disarming of Deputy City Marshal Dan Jones last Monday night, the circumstances of which are very difficult to detail so that a modest public might clearly and unmistakably comprehend the situation. . . .

"It happened at one of Caldwell's fashionable hotels, [which,] like all other fashionable hotels, has two small rooms—over each door is an inscription by which a person may know whether he is to be admitted or not, but it being dark, and Dan's 'business' qualifications not allowing him to stop and read everything that is hung up entered. About this time a lady attempted to enter but was foiled by Dan turning an inside latch—the lady hastened away, but soon returned with the key—(this is not a romance)—locked, unlocked and relocked and finally left to return no more.

"Now as Dan's occupation calls him on the street he concluded that he might depart with safety, but imagine his feelings when he discovered that he had been locked in, but, as will be seen, Dan is equal to all emergencies, and began trying to extricate himself from his odorous prison. There is a seat in the room just opposite the door upon which Dan sat himself down, put his feet against the door, and with Heenan-like strength

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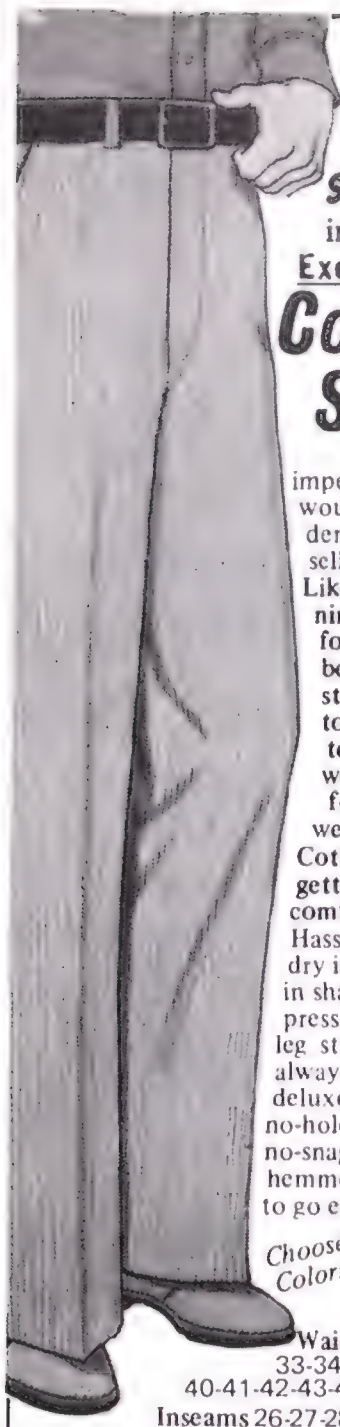

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Dodge City's Long Branch saloon, scene of 1879 shoot-out and many brawls, became Long Branch Temperance Hall by mid-1880s when Kansas went "dry."

pushed the door asunder, and at the same instant back went Dan's revolver down, down to the bottomless—after which a light was brought into requisition—it was fished up, a tub of water, barrel of soft soap and scrubbing-brush were readily used up and the pistol looks as natural as ever, and if the street gossip don't mention this we will never say a word about it to Dan."

Another gentleman popularly known for his derring-do also had an embarrassing accident with his six-shooter. His name was Wyatt Berry Stapp Earp, a man who is known to this day as the efficient police officer of such notorious boomtowns as Wichita, Dodge City and Tombstone. Legend has it that he was perfection itself and practically tamed the West single-handedly.

A preliminary statement from the mouth of the gentleman himself must necessarily set the stage. The utterance was recorded by his biographer, a colorful writer named Stuart N. Lake, and appeared in the popular book *Wyatt Earp, Frontier Marshal.* Said Earp: "I have often been asked why five shots without reloading were all a topnotch gun-fighter ever fired, when his guns were chambered for six cartridges. The answer is, merely, safety. To ensure against accidental discharge of the gun while in the holster, due to hair-trigger adjustment, the hammer rested upon an empty chamber. As widely as this was known and practiced, the number of cartridges a man carried in his six-gun may be taken as one indication of a man's rank with the gunfighters of the old school. Practiced gunwielders had too much respect for their weapons to take unnecessary chances with them; it was only with tyros and would-bes that you heard of accidental discharges or didn't-know-it-was-loaded injuries in the country where carrying a Colt's was a man's prerogative."

When that statement was dictated in the late 1920s, Earp was probably the world's most respected gunfighter, next to James Butler "Wild Bill" Hickok. What would his admiring public have thought had they read an article that appeared in the *Wichita* (Kansas) *Weekly Beacon* on January 12, 1876:

"Last Sunday night, while policeman Erp [sic] was sitting with two or three others in the back room of the Custom House saloon, his revolver slipped from its holster and in falling to the floor the hammer which was resting on the cap, is supposed to have struck the chair, causing a discharge of one of the barrels. The ball passed through his coat, struck the north wall then glanced off and passed out through the ceiling. It was a narrow escape and the occurrence got up a lively stampede from the room. . . ."

In those early days of a frontier town's existence, women were a scarce commod-

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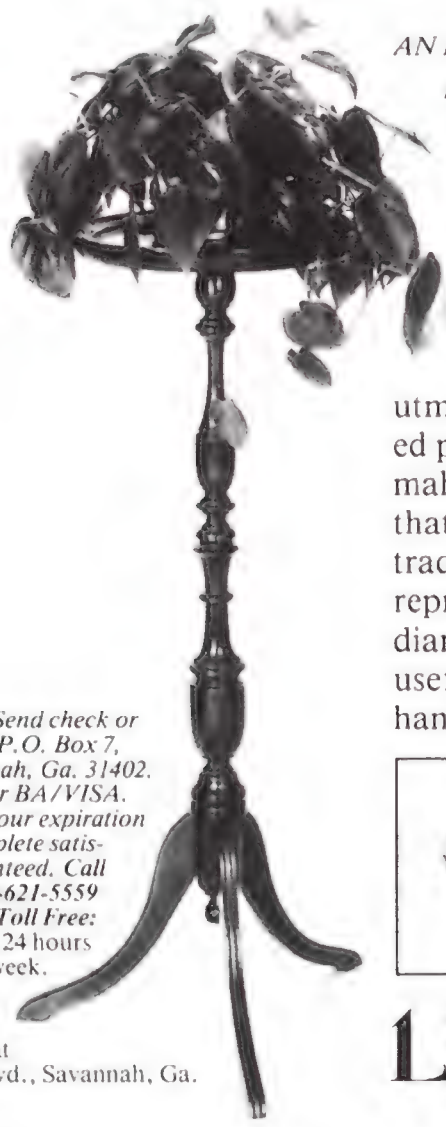
With her favorite prairie dog, Squirrel Tooth Alice wowed Dodge City cowboys.

ity since most men came West alone (unless they were farmers), settled the towns and then sent for their wives and daughters. One can easily imagine the respect with which any female, regardless of her occupation or condition, would command in a situation such as that.

The first women were mainly "nymphs of the prairie," as they were sometimes called in the cow towns. The towns at times took a proprietary interest in the local coterie, regarding them as "our girls" and defending them, albeit a touch facetiously, against insults by the newspapers of neighboring towns. There was good reason for this attitude, for the monthly fines that the girls and the madams paid, along with those paid by saloon owners and gamblers, kept city coffers full.

The girls' residence in various boomtowns has been well recorded in all sorts of contemporary documents, such as newspapers, court records, city treasurers' monthly reports, police judges' reports and state and federal census records—in which, in at least one instance, the names and occupations were recorded for posterity in red ink. The United States census for Ellsworth, Kansas, in 1870, forever established that Harriet Parmenter "does 'horizontal' work," Ettie Baldwin "'squirms' in the dark" and Lizzie Harris "'ogles' fools." To make certain that readers of the census would make no mistake, the census enumerator duly noted their place of residence as a "house of ill fame."



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Then there was the saloon, an oasis in the cultural desert of the frontier West. They were palaces of pleasure, a momentary escape from the rigors of carving a new country out of land inhabited only by coyotes and Indians. "The Alamo swung its doors open to the public yesterday," reported the Dodge City *Times* on June 2, 1877. "As a model in its line it takes the lead. It is new and bright and quiet. It will have no music, and those who resort to its well kept parlor can hear themselves talk as well as think. A partition separates the bar from the large room, making the latter a quiet, pleasant resort, where the cigar and refreshments can be enjoyed at leisure."

Later the *Times* reported a saloon incident which, in effect, describes the character of these frontier business establishments more eloquently:

"A good story is told of a well known citizen of this city, whose name we suppress. The story runs in this wise. He went into _____'s saloon, took a seat, threw his feet on the table, and called for a glass of beer, a sandwich and some Limburger cheese, which was promptly placed upon the table beside his feet. He called to [the proprietor] and told him that the cheese was of no account, as he could not smell it, whereupon the proprietor replied 'Damn it, take your feet down and give the cheese a chance!'"

This was the real West, inhabited by real people. They may not have been larger than life, but I confess I find them a lot more likeable, warts and all, than their legends.

Girls like Timberline, as she was known in Dodge, were called "soiled doves."

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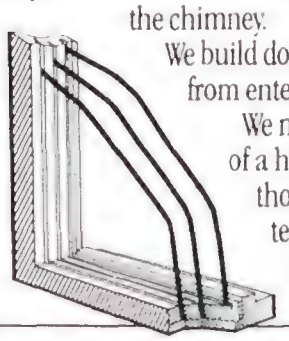

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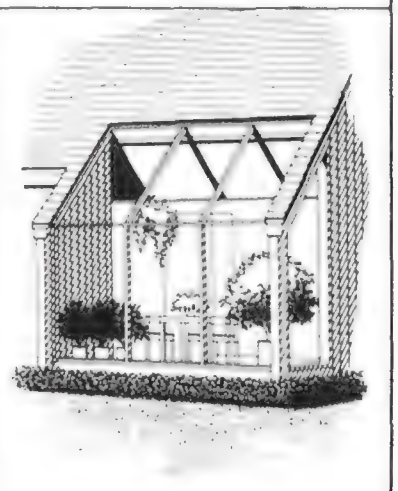

Solar house: some down to earth talk. The features just described are known technically as passive energy conservation. If you want more, the next logical step is active solar heat collection. Acorn's own Sunwave® solar system doesn't need special fluids or special maintenance. It's simple to install, simple to operate and simple to understand. We'll be happy to send you details.

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These are just a few examples of what the Engineering Research Center does throughout *all* of Western Electric's manufacturing operations —developing new ideas in technology to improve telephone products and produce them at lower cost.

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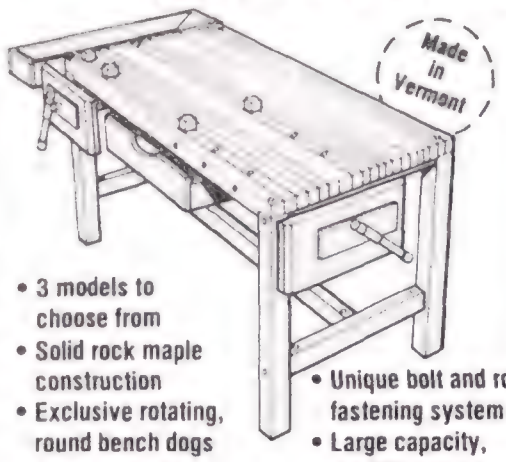

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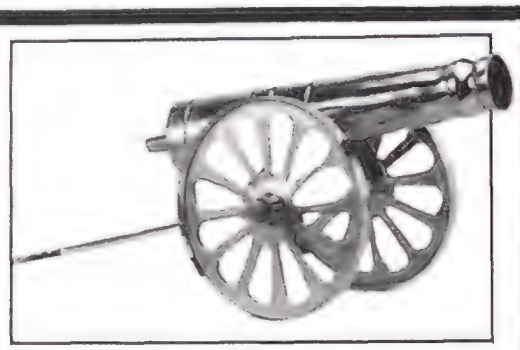

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Book reviews

The Wine of Life and Other Essays on Societies, Energy & Living Things
Harold J. Morowitz
(St. Martin's Press, $10)

If you are one of those in my group, a mass so large that it constitutes an entire subculture by itself, composed of people stubbornly ignorant in science and perhaps even bragging, in embarrassment, about it, you may find, as I did, a way out and an exhilaratingly entertaining one at that in this modest and life-enriching book.

When C. P. Snow, in his Rede Lecture at Cambridge in 1959, set out the position of the two cultures, he was propounding what has become an inescapable truism of our age, so much so that it is inescapable for reviews such as this to bring it in. And yet, truisms being what they are, they are not that difficult to take apart, so, witness this. There are, of course, many cultures, but they are all within *the one* which is the culture of human beings, all of us.

The problem is, as Lord Snow warned us, to get it together; not so easy a thing to do, as history shows us, and then, you might say maliciously, shows us again, rubbing our noses in it in a manner of speaking. When someone comes along and reveals radiant, good-humored, lucid and even inspiring possibilities in science (great artists, in the nature of what they create, do it all the time—it being, after all, what art is), there is an occasion of honor for mankind. This is the kind of book Harold Morowitz has written for us.

Morowitz is by profession a molecular biophysicist and biochemist, a professor in these arcane (to our group) subjects at Yale. For some five years now he has been studding the specialized pages of the trade journal *Hospital Practice* with columns of pure gold worth, in real value, even more than the other stuff of the same name is bringing on the world market these awful days. The point is this: unless the kind of sense men like Morowitz make has some effect on us, we are on our way to being chewed up not only by world trade markets in whatever the barter happens to be, but in ways more awful to contemplate.

It is very fine that science writers like Dr. Lewis Thomas and Carl Sagan, and thinkers like Buckminster Fuller, appreciate and admire Morowitz' essays, but then they deal in such things. It is more important for people in that great subculture of scientific ignorance to learn what he has to say, which is why no expert is writing this.

What he has to say, in the most lucid and literate way, is this: "In looking at science, life, and my fellow human beings, my mind in an undisciplined way detects the cosmic within the nitty gritty and the trivial within the infinite. I believe that deep and important issues should be approached with sufficient good humor to keep us from regarding our mutable opinions as eternal truths. While not ignoring the real tragedy in the world, I feel it important to concentrate on hope. Given the existential dilemma of forever unanswered questions about our universe, I believe that joy is more fun than sadness and no further from the elusive reality of things. In short, it should be possible to be profound without being boring or afflicted with malaise. . . . If many threads weave through these essays, the fabric itself is a deep affection for science, rationalism, and that undefinable spark that makes us human and creative. . . ."

Having just received a birthday card from one of his five children announcing that, according to biochemists, the human body is worth only 97 cents, Morowitz goes on to show that, were you to buy the stuff from a biochemical company, one human body would cost $6,000,015.44. And, then, he announces himself a Six Million Dollar Man. This is all supported by a computer breakdown at current market prices as quoted by a biochemical supply house.

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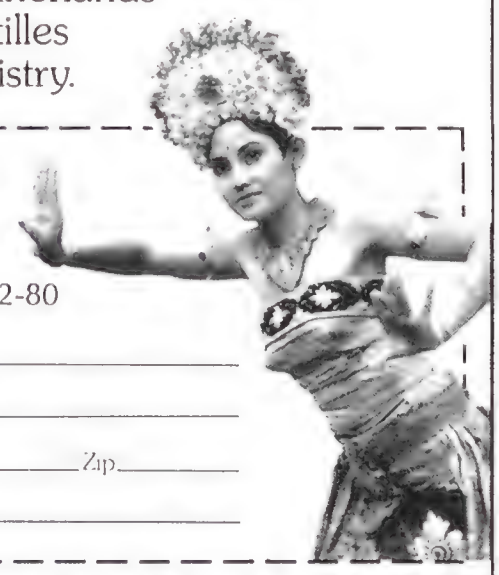

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From here Professor Morowitz gets into his stride and displays how a scientist can think: ". . . Even if I bought all the macromolecular components, I would not have purchased a human being. A freezer full of unstable molecules at −70°C does not qualify to vote or for certain other inalienable rights. . . . Continuing the argument to its penultimate conclusion, we must face the fact that my dry-ice chest full of organelles . . . cannot make love, complain, and do all those other things that constitute our humanity. . . .

"A final step is necessary in our biochemical view of man. An incubator of 76,364 grams of cell culture at 37°C still does not measure up, even in the crassest material terms, to what we consider a human being. . . . Our ability to ask the question in dollars and cents has immediately disappeared. We suddenly and sharply face the realization that each human being is priceless. We are led cent by dollar from a lowly pile of common materials to a grand philosophical conclusion—the infinite preciousness of each person."

That is the substance of one short chapter, one of 57, each short, wise and, frequently, astonishing. You will, as you read and relish them, be painlessly informed about science and what it is and can be. And, will discover that it is about human goodness, too.

—Bennett Schiff
Board of Editors

Italian Drawings in the Art Institute of Chicago
Harold Joachim and Suzanne Folds McCullagh
(The University of Chicago Press, $12.50)

17th Century Italian Drawings in the Metropolitan Museum of Art
Jacob Bean
(The Metropolitan Museum of Art, $28.50)

From the early Renaissance to the end of the 19th century, drawing was the basic creative act from which all the other visual arts derived. The drawing fixed on paper an artist's initial thoughts on a new subject or a new composition. It was used to study, analyze and examine the details of a project under way. And, finally, it served as the model for

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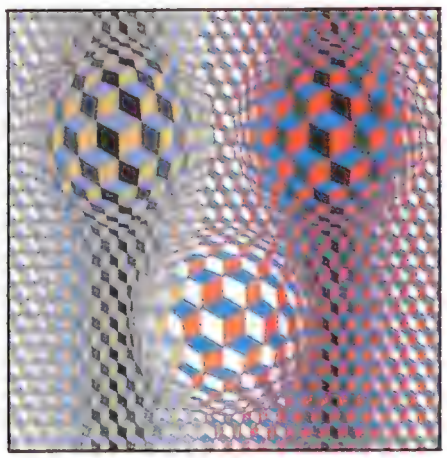

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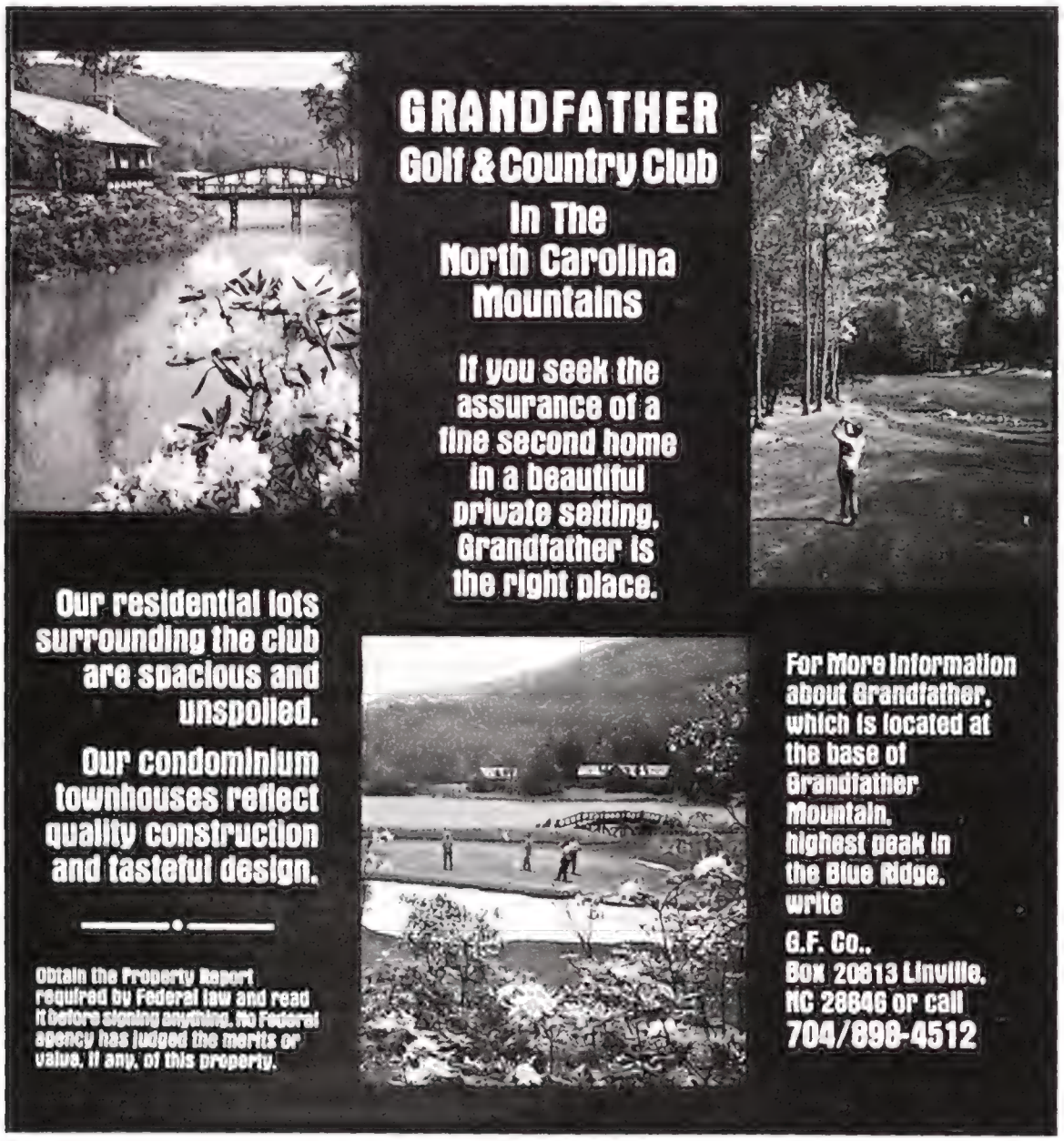
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a work which was then to be completed in paint, or in marble, or in bronze. Yet, in spite of their importance, drawings for a long time were considered to be essentially utilitarian and to possess only secondary esthetic qualities. By the mid-16th century, this attitude had changed dramatically and from that point on sketches, studies and models have been avidly acquired by collectors. These two books hint at the wealth of Italian drawings which now exist in American collections.

Chicago Art Institute's *Antonio Carracci*

The selective catalog of the Italian drawings owned by the Art Institute of Chicago offers a good introduction to the history of Italian draftsmanship from the mid-15th to the 18th century. The catalog entries are quite thorough and discuss the artist and the work in detail, and include as well all relevant technical and bibliographical information. Among the earliest sheets is a double-sided drawing by Pisanello with detailed studies of a bow and a quiver. One can also single out a drawing by Girolamo Genga, a fellow student of Raphael in Perugino's workshop, depicting a mythological pageant; a pen-and-brown-ink drawing by Parmigianino showing a young man serving wine; a nearly life-size study by Federico Barocci for the head of the Virgin for the *Deposition* in the cathedral of Perugia; the exquisite

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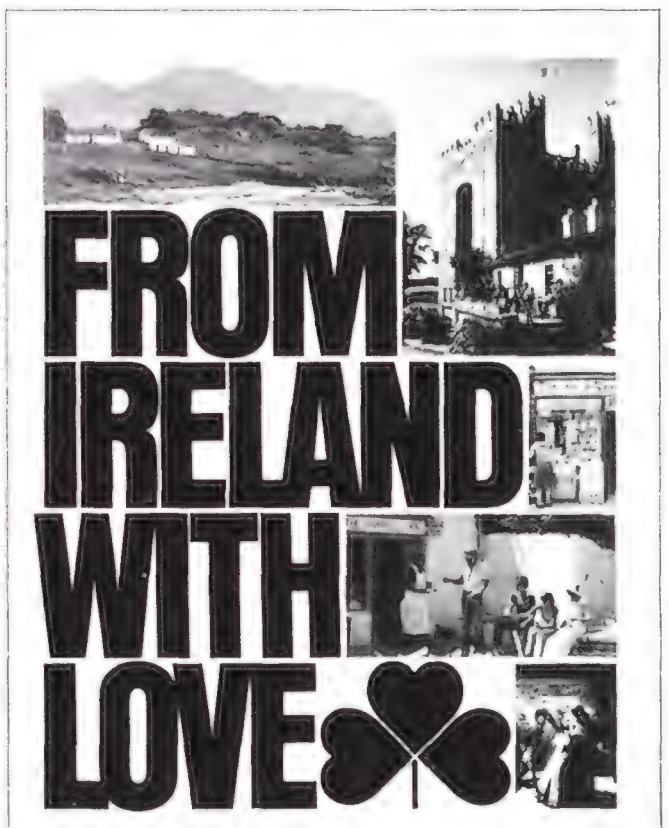

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portrait of Antonio Carracci by his father Agostino; nine portraits by Giovanni Battista Piazzetta which were originally in the Schulenburg collection; the large number of first-rate sheets by both Giovanni Piazzetta and Giovanni Domenico Tiepolo; and *The Rape of Lucretia* by Giuseppe Cades, who worked in Rome in the last half of the 18th century, with which the volume ends.

The other book is narrower in focus, but what it lacks in breadth it compensates for in quality. It is an inventory of the 17th-century Italian drawings in which all the relevant sheets in the Metropolitan Museum's collection that "can be plausibly attributed to known artists of the period are described and reproduced." The actual range of the drawings included goes from the late 16th to the mid-18th century. The volume implicitly provides a survey of Italian baroque draftsmanship and contains brilliant examples of the work of the major artists of the period. Annibale Carracci is represented by a number of sheets revealing various aspects of his career and of his working method. There are studies for the ceiling of the gallery in the Farnese Palace in Rome, studies and sketches of smaller compositions and paintings, and a marvelous genre scene executed in pen and black ink with gray and brown wash depicting a mother and two children before a hearth.

One cannot help commenting on Giovanni Benedetto Castiglione's *Noah Entering the Ark*, a characteristic work in which a Biblical subject and an animal scene have been combined. Executed with a brush in red-brown and blue paint on beige paper, the sheet stretches the concept of drawing to the point where fine distinctions must be made to separate "drawing" from "painted sketch." Among the sheets by Pietro da Cortona there are also two pen-and-brown-ink sketches on the recto and verso of the same sheet for Guercino's altarpiece representing St. William, Duke of Aquitaine, receiving the monastic habit; a monumental drawing of a tree, apparently from nature, by Salvator Rosa; drawings by Carlo Maratti which relate to major projects like the ceiling in the Great Hall of the Altieri Palace in Rome; a beautiful red chalk portrait of a man by Benedetto Luti; and a lively sketch by Sebastiano Ricci showing St. Anne teaching the Virgin.

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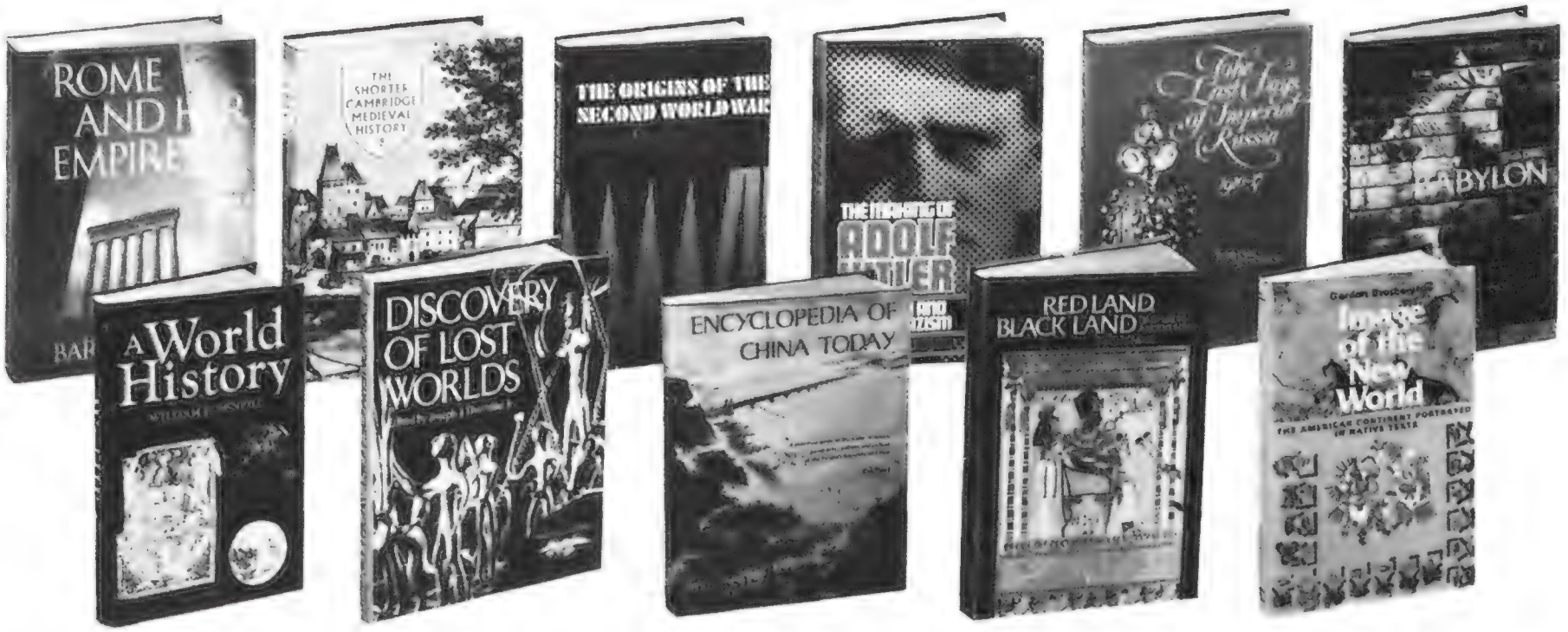
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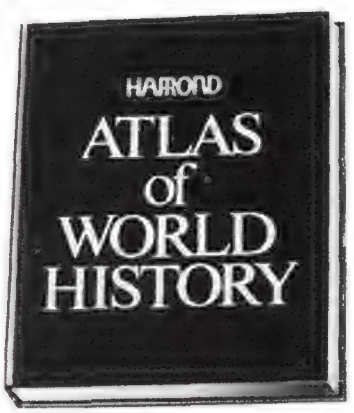

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—Frank DiFrederico
Associate professor, art history,
author of *Francesco Trevisanti*

A Nervous Splendor: Vienna 1888/1889
Frederic Morton
(Atlantic-Little, Brown, $14.95)

As it neared the end of the 19th century, Europe was like a drunken duchess. Listing from decades of excess, she averted her eyes from the vulgar realities of anti-Semitism, anarchy and nationalism and tried to waltz her problems away. When she sobered up in 1914, the old order was gone and she was left with a colossal hangover and the Great War.

No country so consistently represented this reluctance to face reality as Austria, and no city more so than Vienna. A jumble of nationalities, the Austro-Hungarian empire was held together by Emperor Franz Josef, who came to power after his uncle Ferdinand—with his minister Metternich—escaped the failed revolution of 1848. Hopelessly unimaginative, the Emperor's greatest contribution to the harmony of Europe was his ability to hang on for 68 years, longer even than Victoria.

Frederic Morton, grandson of a Viennese jewelry manufacturer and biographer of the Rothschild family, takes the ten-month period from July 1888 through April 1889 in Vienna as the subject of his new book. By focusing on such a brief period, it is his intent to look "for the city's pulse" and in so doing to re-create the moment "when the Western dream started to go wrong dramatically and the very failure was flooded with genius."

Certainly this is an intriguing idea for a book, particularly as Vienna was not only the "musician's Holy City," in Brahms' phrase, but an intellectual center as well. Here, seminal ideas were being formulated by Freud and Theodor Herzl, the father of modern Zionism. Great music was being written by Brahms, Bruckner, the Strauss family, Hugo Wolf and Gustav Mahler. The theater had Arthur Schnitzler, whose

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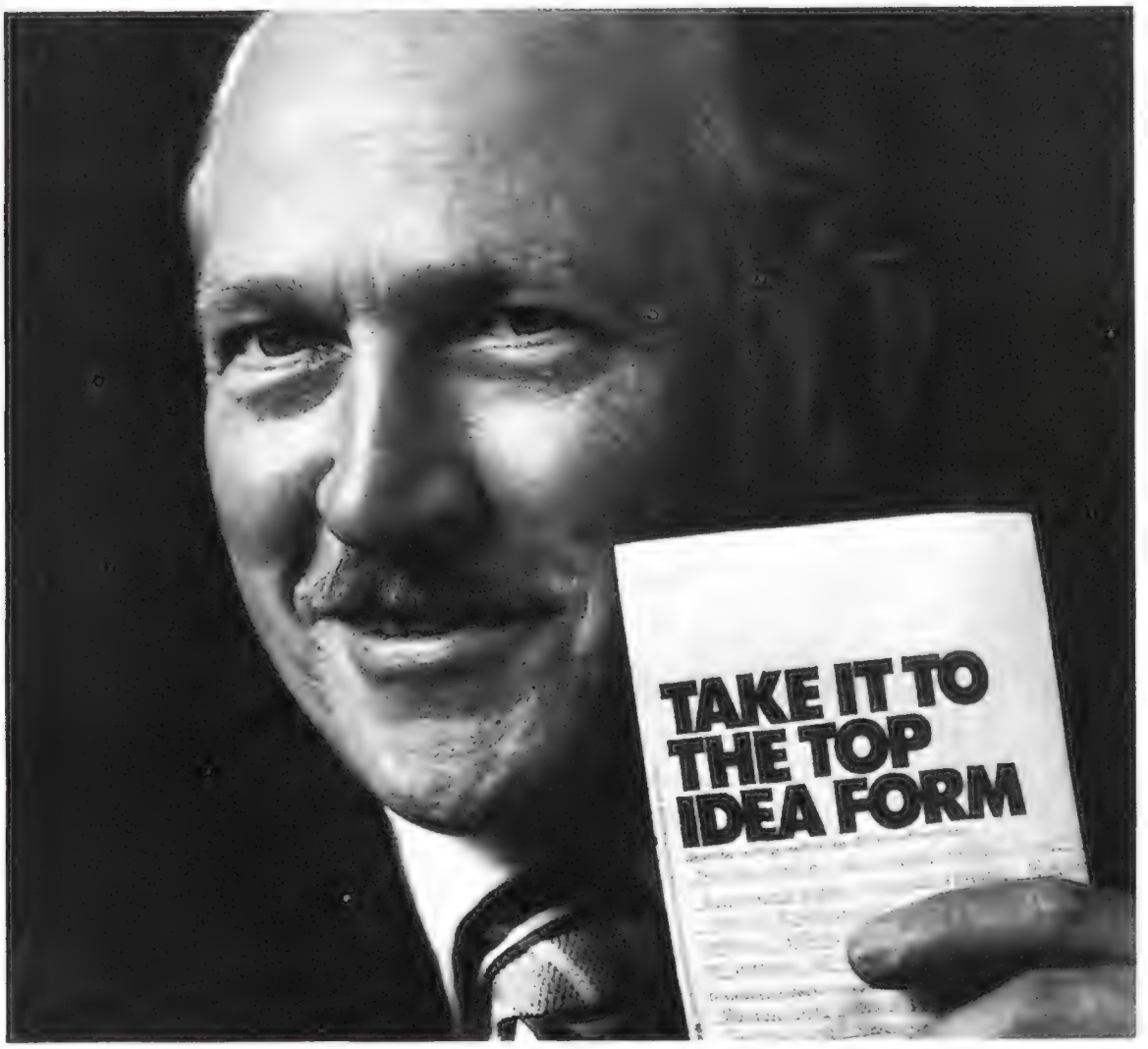

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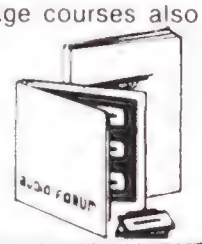

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plays of Viennese manners were set in the fin-de-siècle tone of contemporary European drama; the art world had the young Gustav Klimt; and the aristocracy had the young Prince Rudolf.

Dashing, clever and altogether miserable, Rudolf epitomized the malaise of purposeless indulgence. Unlike his contemporary, Oscar Wilde, who could never satiate his urge to flout Victorian sensibilities, Rudolf despised the fecklessness of the Viennese high life. Locked into a chocolate-soldier role by his father, he took to writing anonymous articles for the liberal newspaper *Wiener Tagblatt*. But for all his efforts to sound the tocsins and improve his people's lot, Austria "couldn't seem to take efficient

Prince Rudolf personified a suicidal age.

advantage of progress." As "manner overtook substance," Vienna waltzed faster and faster against a background of suicides ("Europe's highest" rate), starving people, and a brooding prince.

Using Rudolf's frustration and suicide at Mayerling as counterpoint, the author attempts to show us the rhythm of Viennese life—"its depth, its details, its dailiness." In the latter two categories he most certainly succeeds—Freud's penury, Bruckner's jealousy of Brahms.

There is little depth, however, in these tableaux vivants. Not unlike the Vienna

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he portrays, Morton gives us a mannered, somewhat sterile portrait of an age. Perhaps the effect of the book is what the author intended: a tapestry of a dying age at its most rash and creative period, slightly disjointed but meticulously detailed. And perhaps the very richness of the period guarantees that the reader will feel cheated; for all the details of "dailiness," one is left with a sense of incompleteness, a curious lack of perspective.

While Morton takes great pains to describe what Brahms ate at his favorite restaurant, we are not told that the Empress Elizabeth, Rudolf's mother and Franz Joseph's wife, was stabbed to death in 1898 by an anarchist.

Also omitted is any mention of the turmoil brought between 1882 and 1914 to England by the Boer War, to France by the Dreyfus Affair, to America by the Haymarket Square riot and McKinley's assassination. So the reader is left wondering why, amid all that splendor, everyone was so nervous.

—Jill Merrill
Washington critic

Americans on the Road: From Autocamp to Motel, 1910-1945
Warren James Belasco
(MIT Press, $14.95)

"It is an irony of modern travel that those who flee off the beaten track often beat a path for those they flee," writes Warren James Belasco in this intriguing history of the American motoring vacation. Astounding as it seems to modern free spirits who reject standardized chain motels in favor of more "genuine" travel experiences under canvas or along wooded trails, the Holiday Inn and its competitors descend directly from a similar rebellion by the first generation of motoring Americans. Sixty-five years ago the car was adventure, romance, even daring for the vacationing middle class—as much a rebellion against conventional, prepackaged travel as the four-wheel-drive vehicle or white-water raft is today. In the family car, Everyman could be "Thoreau at 29 cents a gallon."

Rebellion is relative, Belasco observes, and in this century's early years the conventional family vacation was spent not making miles in the family car but making conversation on the veranda of a resort hotel. Americans who could afford vacations packed their trunks full of stiff, formal clothing and journeyed by train to a large, formal hotel catering to rail travelers, there being essentially no other kind of traveler, anyway.

But wheels, as every generation since has believed itself the first to discover, meant freedom, and adventurous vacationers were soon off in their Hupmobiles to discover the "real" America. These voyagers made a virtue of a necessity—the almost complete lack of roadside facilities to accommodate them—and, fancying themselves gypsies, camped where they wished along the road.

But soon autocampers, like joggers in our own time, grew so numerous that a previously almost anarchic sport had to be domesticated. Towns began to establish free municipal campgrounds to channel the flow of tourists and their dollars without stemming it.

Autocampers prided themselves on the rough democracy of the campground, where "all kinds" mingled in equality

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Early in the century automobile travel had an aura of adventure; anyone could be "Thoreau at 29 cents a gallon."

until economic bad times made the democracy a bit too rough for many middle-class tastes. Charging fees solved this problem for a while, and also permitted the entry of private entrepreneurs into the business of providing roadside stopping places. Camp owners began putting up makeshift permanent shelters to give themselves a competitive edge; tired travelers then need not make and break camp every day. And the distance between a closed-in chicken coop and a Ramada Inn is shorter than it appears.

Along the way Belasco has penetrating observations to make about the contradictions of American leisure: the pull of comfort against novelty, authenticity and excitement. Time and again, he observes, growing numbers of enthusiasts have killed the spontaneity and adventure. And then, as now, business stood ready to standardize novelty. In the American search for adventurous recreation, Belasco writes, "The business prospects were as bright as the search was self-defeating."

—Beryl Lieff Benderly
Washington writer and critic;
author, *Discovering Culture*

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Additional reading

Adirondacks (p. 42)

Adirondack Country by William Chapman White, Alfred A. Knopf, 1967

Adirondack Wilderness: A Story of Man and Nature by Jane Eblen Keller, Syracuse University Press, 1980

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Monte Albán (p. 62)

The Emergence of Society: A Prehistory of the Establishment by John E.

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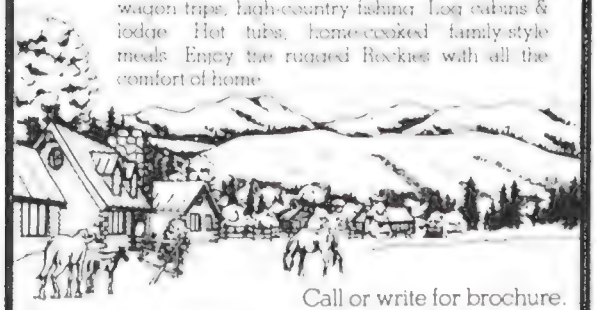

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Pfeiffer, McGraw-Hill, 1977

Monte Albán: Settlement Patterns at the Ancient Zapotec Capital by Richard E. Blanton, Academic Press (New York), 1978

"The Origins of Mesoamerican Writing" by Joyce Marcus, *Annual Review of Anthropology,* Vol. 5, 1976

"The Life and Death of a Great City" by John E. Pfeiffer, *Horizon,* Winter 1974

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Draft horses (p. 76)

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Diaghilev by Richard Buckle, Weidenfeld & Nicolson (London), 1979

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Gold rush (p. 104)

"Mother Lode's New Gold Rush" by Carl Irving, *San Francisco Examiner,* December 16, 1979

The Forty-Niners by the editors of Time-Life Books with text by William Weber Johnson, 1974

Three Years in California; William Perkins' Journal of Life at Sonora, 1849-1852 with introduction and

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annotations by Dale L. Morgan and James R. Scobie, University of California Press (Berkeley), 1964

Personal Adventures in Upper and Lower California, in 1848-49 by William R. Ryan, Arno Press, 1973

Hunting for Gold by Major William Downie, American West Publishing Company (Palo Alto), 1971

The California Gold Rush Diary of a German Sailor by Adolphus Windeler, edited with an introduction by W. Turrentine Jackson, Howell-North Books (Berkeley), 1969

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Unicorn: Myth and Reality by Rüdiger Robert Beer, translated by Charles M. Stern, Mason/Charter (New York), 1977

The Lore of the Unicorn by Odell Shepard, Houghton Mifflin, 1930; reprinted by Barnes & Noble, 1967

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"The Narwhal, *Monodon monoceros*, in Eastern Canadian Waters" by A. W. Mansfield *et al.*, *Journal of the Fisheries Research Board* (Ottawa), Vol. 32, No. 7, 1975

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Why the West Was Wild by Joseph W. Snell and Nyle H. Miller, Kansas State Historical Society (Topeka), 1963

Great Gunfighters of the Kansas Cowtowns, 1867-1886 by Nyle H. Miller and Joseph W. Snell, University of Nebraska Press, 1963

The Gunfighters by the editors of Time-Life Books with text by Paul Trachtman, 1974

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The Western Hero in History and Legend by Kent Ladd Steckmesser, University of Oklahoma Press, 1965

Gun Law: A Study of Violence in the Wild West by Joseph G. Rosa and Robin May, Contemporary Books (Chicago), 1977

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There's no business like show business . . . and there's no record series like the Smithsonian American Musical Theater Series! Cast albums today are nothing out of the ordinary, but before 1943 there was no such thing. But there were the songs, often recorded by the stars, the featured players, and the composers. The Smithsonian has tracked down which stars recorded what songs for which labels—piecing out those with broadcast material and even piano rolls. The result . . . as close as you can get to experiencing the original show.

The Band Wagon—This recording recaptures the theatrical magic of Dietz and Schwartz's highly innovative musical revue. The 1931 hit features the brother-sister team of Fred and Adele Astaire (her farewell to the stage) and the lyric *Dancing in the Dark.*

Funny Face—Another Astaire hit! With brother Fred as guardian and sister Adele as his flapper ward **Funny Face** opened to raves in November of 1927. And a sibling success it was—with Ira and George Gershwin penning such memorable songs as *'S Wonderful* and *My One and Only.*

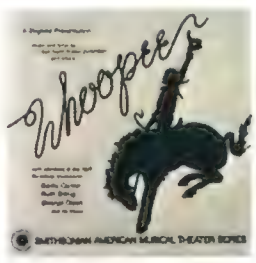
Let's Face It
Wit and elegance abound in these three Cole Porter shows. The 1941 reconstruction of **Let's Face It** features the antics of a young Danny Kaye. Selections are also included from the 1936 production starring Ethel Merman (**Red, Hot and Blue!**) and the 1938 show which introduced a demure Mary Martin (**Leave It to Me!**). *Including: Ev'rything I Love • My Heart Belongs to Daddy*

Lady, Be Good!
The original 1924 production is reconstructed with performances by Fred and Adele Astaire (one contains *his* first dancing on records) and by George Gershwin himself. The selections have been taken from several sources, including some Gershwin radio broadcasts. *Including: Oh, Lady Be Good • Fascinating Rhythm • Half of It Dearie Blues • Hang on to Me*

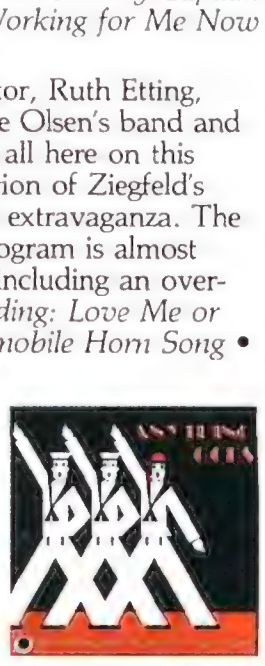
Oh, Kay!
A Long Island bootlegging operation is the setting for this musical written especially for Gertrude Lawrence. Frequently revived, selections from this popular Gershwin show are now available in a 1926 edition—with performances by Lawrence, Gershwin, and duo pianists Arden and Ohman. *Including: Someone to Watch Over Me • Do, Do, Do • Clap Yo' Hands • Maybe*

Souvenirs of Hot Chocolates
Featuring music composed and performed by Fats Waller, this all-black revue marked the Broadway debut of Louis Armstrong. Songs, comedy sketches, and dance numbers are all part of this night club show so opulent that it was moved to Broadway. *Including: Ain't Misbehavin' • Sweet Savannah Sue • Black and Blue*

Ziegfeld Follies of 1919
Enthusiastic audiences applauded Eddie Cantor, Bert Williams, John Steel, and the popular team of Van and Schenck in the 1919 edition of the Follies. This album features those stars performing 17 numbers, five composed by Irving Berlin. *Including: A Pretty Girl Is Like a Melody • Mandy • You'd Be Surprised • I've Got My Captain Working for Me Now*



Whoopee
Eddie Cantor, Ruth Etting, and George Olsen's band and singers are all here on this reconstruction of Ziegfeld's Wild West extravaganza. The musical program is almost complete, including an overture. *Including: Love Me or Leave Me • Eddie Cantor's Automobile Horn Song • Makin' Whoopee!*



Anything Goes
Since its 1934 Broadway triumph, this shipboard musical comedy has been an American favorite. Archival recordings made by the original New York and London cast members—including Ethel Merman—and by Cole Porter himself recreate the 1934 show. *Including: I Get a Kick Out of You • You're the Top • Anything Goes • Blow, Gabriel, Blow.*

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Smithsonian highlights

February is Black History Month, and five Smithsonian museums join in marking that history with some very special events. Museum of African Art (MAA) and the Anacostia Neighborhood Museum have full schedules of films, lectures, workshops, concerts and entertainment as well as related exhibitions. The National Portrait Gallery's *Portraits in Motion* series dramatizes Harriet Tubman, Paul Robeson and the spirit of Harlem. The Museum of Natural History is the forum for a film series for children, as well as a dramatic performance and puppet show sponsored jointly with the MAA. And the Museum of History and Technology has a new photography exhibit, *Voices of the Civil Rights Movement,* a collection which speaks to us about struggle.

Special February events

National Collection of Fine Arts

Birds: Works from the 1979 Annual Exhibition of Art Depicting Birds (February 1-May 6)—Paintings, drawings, woodcarvings (below).

Recent Acquisitions: Prints, Drawings and Watercolors (February 8-June 22)—60 works on paper.

The American Renaissance, 1876-1917 (February 22-April 20)—Some 250 works, from architectural models and murals to furniture and wallpaper.

Chicago Currents: The Koffler Foundation Collection, Traveling Exhibition, Miami University Fine Arts Museum, Oxford, Ohio, February 16-March 16.

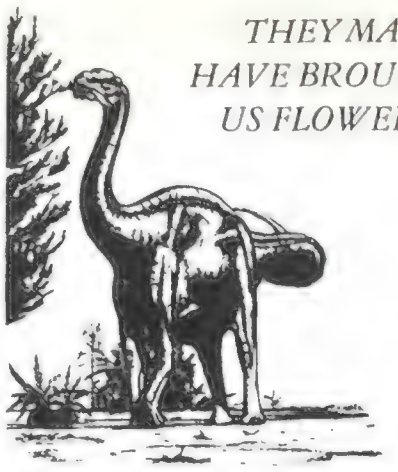
Museum of African Art

Black History Lecture Series (February 3, 10, 17, 24; 2 P.M.).

Second Annual Youth Concert (February 2, 2 P.M.)—Youth "orchestra," ages 4-14.

Black History Performances—"An Evening of African Music," March 1, 7:30 P.M., Baird, MNH; free, obtain ticket from MAA in advance; drama by students of Duke Ellington School of the Arts, February 9, 2 P.M., Baird; puppet show, February 16, 2 P.M., Baird.

NCFA's *Birds* displays *Greater Prairie Chicken,* painted wood by William Koelpin.



THEY MAY HAVE BROUGHT US FLOWERS

"An abominable mystery," Charles Darwin called the origins of flowers (or angiosperms, as they are known to scientists). Now Robert Bakker, a Smithsonian research associate, has found evidence that the emergence of angiosperms was probably caused by changes in the browsing habits of dinosaurs. About 100 million years ago, as ornithischian dinosaurs replaced taller sauropods and stegosaurs, their predominant diet shifted from tall trees to low-lying shrubs. This eating pattern hastened the evolution of plants capable of rapid growth to recolonize the bare spots. Enter the fast-growing angiosperms, about five to ten million years after the appearance of the ornithischians. Thus may dinosaur diets have beautified our environment.

Natural history research is only one of the many Smithsonian functions that are financed by a combination of appropriations from Congress and gifts from private donors.

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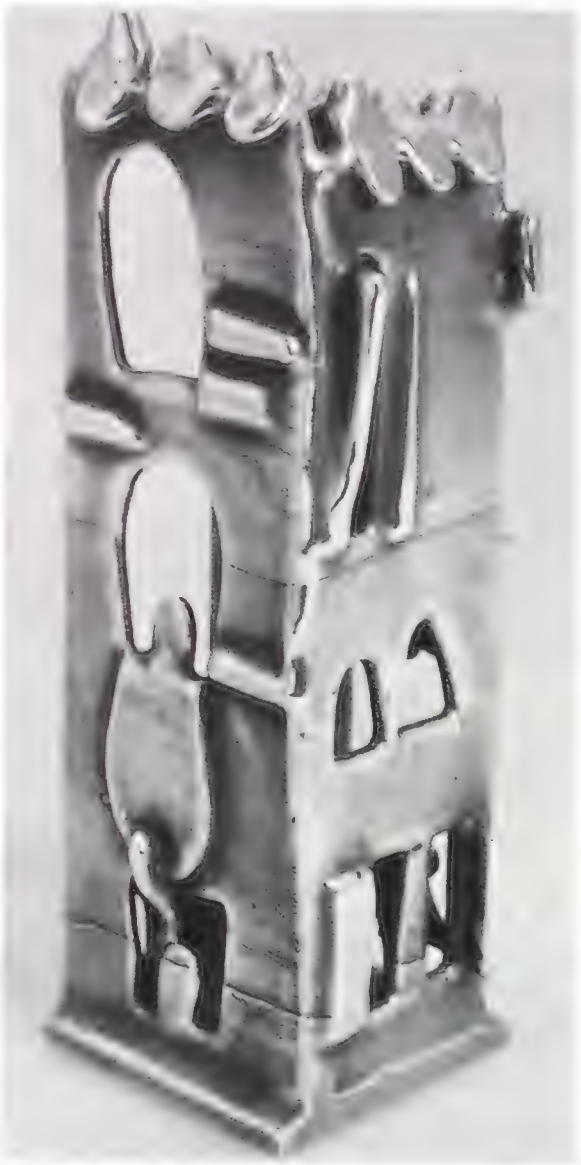
Children's Film Festival (February 23, 2 P.M.)—Films about Africa.

Anacostia Neighborhood Museum
Black History Month—Full program of lectures, films, musical performances, demonstrations and puppet shows; for information, call 381-6731.
Out of Africa: From West African Kingdoms to Colonization (through June 30).



Silversmithy show at Renwick includes Stephan Rostrup's sculpture, 1979.

Renwick Gallery
Georg Jensen Silversmithy: 77 Artists, 75 Years (February 29-July 6)—Flatware, jewelry, decorative accessories show classic columns and garlands as well as geometric and modern designs (above).
Twills with Titles: H. Theodore Hallman, weaver; Kenneth G. Mills, poet (February 1-April 27)—18 colorful textile hangings with poetic titles.
Ryijy Rugs from Finland: 200 Years of a Textile Art (through March 16).
The Harmonious Craft: American Musical Instruments, Renwick Traveling Exhibition, John Michael Kohler Art Center, Sheboygan, Wisconsin, February 3-March 23.

Museum of Natural History (MNH)
The Precious Metals: Gold and Platinum—Recent exhibition of spectacular samples as these metals occur in nature, including fist-sized nuggets of gold and crystalline gold taken from California's famous "Mother Lode" (p. 104).
Children's Film Series (February 13, 14, 20, 21, 27, 28, 10:30 A.M.)—African folk tales and everyday life.
Drama, puppet show (see MAA).
Lectures—"Excavation at Tell Jemmeh: Israel" (February 8, noon) Gus Van Beek, curator, Old World Archaeology; "Animals of the Galápagos Rift" (February 15, noon) Meredith Jones, curator, Invertebrate Zoology; "City of the Dead: Early Bronze-Age Excavations in Jordan" (February 22, noon) Donald Ortner, curator, Department of Anthropology.

Freer Gallery of Art
A Decade of Discovery: Selected Acquisitions 1970-1980 (through May).
Japanese Prints (through April 1)—Recent exhibition of 18th- and 19th-century woodblock prints.
Art and Healing in Tibet: Images of the Buddha of Healing (February 12, 8:30 P.M.)—Talk by Raoul Birnbaum, Metropolitan Museum.
Art of the Court of Shah Tahmasp (through March 30).

Museum of History & Technology (MHT)
Voices of the Civil Rights Movement (February 2-29)—Photos documenting activities in the 1960s; concerts, see Smithsonian events.
Valentines of Yesteryear (February 1-29)—Charming small exhibit of antique and special cards.

Air & Space Museum
Comparing the Planets (February 13, 8 P.M.)—Thomas A. Mutch, NASA, discusses landscapes of distant planets.
Space Fiction Films (February 1, 29, 7:30 P.M.)—Free films.
Our Next-Star Neighbors (February 2, 9 A.M.)—Monthly sky lecture looks at stars in our solar neighborhood.

Cooper-Hewitt Museum (New York)
Mustard Pots from the Colman Collection (February 12-April 6)—Charming containers document work of British silversmiths during past 250 years (p. 172).
A Century of Ceramics in the United States, 1878-1978 (February 26-May 25)—A variety of styles and techniques.
The Oceanliner: Speed, Style, Symbol (through April 6)—A look at the 20th-century transatlantic express.
Tiles (through March 30)—Exhibit surveys history of tiles in East and West, 16th to 20th centuries.

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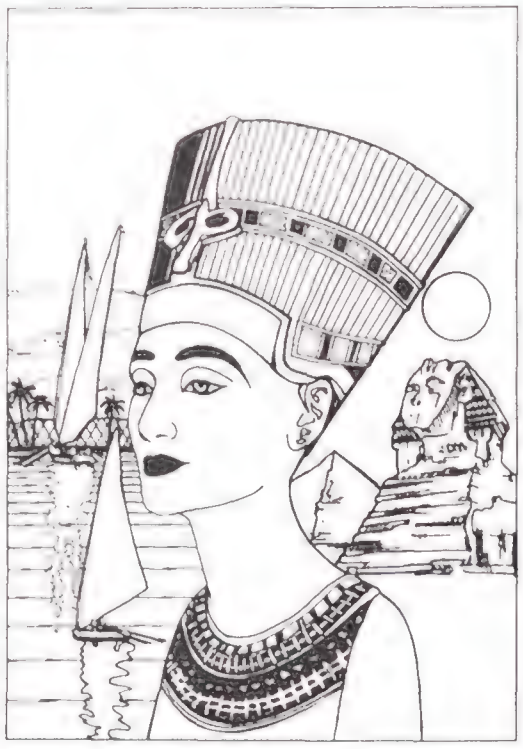

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National Portrait Gallery
Howard Chandler Christy (through August 3)—Works include book illustrations, "Christy girl," portraits (below).
Portraits in Motion: The Black Experience (1:30, 3 P.M., dates below)—"Black and Blue," Actor Ayl G. Mack presents songs of Harlem, February 2; "Robeson in Song and Memory," soprano Beatrice Rippy and pianist Carroll Hollister in musical dialogue, February 9; "Just Another Soldier," actress Delores St. Amand as Harriet Tubman, March 1.
The Great Crash (through April 20).

Howard Chandler Christy: self-portrait at the National Portrait Gallery

Smithsonian events
Special events and performances in January are listed below. For tickets, call (A) 202-381-5157 or (B) 202-381-5395, as noted in the listings.
Discover Puppeting! (January 30-February 24)—As part of Black History Month, Chicago's Blackstreet USA puppeteers present original fairy tale, minijam session, Discovery Theater, Arts and Industries, Wednesdays-Sundays. (B)
Key Issues in Science Today (January 23, February 20, March 19, April 23, 8 P.M., Baird, MNH)—Lectures, questions and answers by distinguished scientists. (A)
Voices of the Civil Rights Movement (January 30-February 3, MNH), Songleaders' workshop plus colloquium; call 381-6781; concerts, February 2, 7 P.M.; February 3, 1 and 3 P.M., MHT.
20th-Century Consort (February 3, Hirshhorn Museum, 7 P.M.)—Concert. (B)
Richard Smallwood and Myrna Summers (February 10, 3 P.M., Baird)—Washington composers present distinct Black gospel styles. (B)

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Smithsonian Chamber Players (February 11, 8 P.M., Baird)—Chamber music concert with guest mezzo-soprano Jan DeGaetani; also, February 12, Lincoln Center, New York City. (B)
Mars (February 13, 8 P.M., Baird)—Illustrated talk by geologist Robert Wolfe interprets recent data. (A)
Toulouse-Lautrec: Artist of the Belle Epoque (February 14, 6 P.M., Hirshhorn)—Lecture by author Theodore Reff, Columbia University. (A)
Stan Getz (February 16, 17, 6 P.M., Baird)—Jazz concert. (B)
Apprentice to Genius: Years with Frank Lloyd Wright (February 20, 8 P.M., Hirshhorn)— Architect Edgar Tafel. (A)
Black Film Experience (February 28, March 6, 7:30 P.M., Baird)—Films by and about Blacks. (A)
Journey into Northern China (February 26, 8 P.M., NASM)—Illustrated lecture by geologist Farouk El-Baz looks at this rugged, unfamiliar area. (A)

Musical Weekend in May

A concert at Kennedy Center and a performance on 18th-century Italian stringed instruments by the Smithsonian Chamber Players are two of the many events planned for the ninth annual Musical Weekend, May 2-4. Sponsored by the Smithsonian's Division of Musical Instruments and the Friends of Music, the program includes meals and hotel accommodations for two nights. For information write: Musical Weekend, Room 4124, Museum of History and Technology, Washington, D.C. 20560.

Membership benefits when visiting the Smithsonian

The **Associates Reception Desk,** in the castle, is open 10 A.M.-4 P.M. daily for registration, exhibit and orientation information. Ask for time and place of "orientation slide-talk," a 30-minute overview of Smithsonian exhibitions.

The **Associates Lounge** in the castle, a quiet place to relax, is open from 10 A.M. to 5:30 P.M. daily.

The **Members' Dining Room, "The Court,"** in the Museum of Natural History, is open Monday-Friday for lunch (11 A.M.-3 P.M.); weekends, breakfast (8:30-11 A.M.), brunch (11 A.M.-3 P.M.). Enter via Constitution Avenue for breakfast.

For previsit information, send postcard or phone Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264 or TTY 202-381-4448). Allow two weeks for receipt.

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ANNIVERSARY TILE. A tile on display in our 1876 Centennial exhibit has been reproduced by craftsman Michael Kearney. His embossed pattern gives depth and texture to its beautifully glazed and hand painted surface. Equally lovely to decorate a wall or protect a table. Approximately 7½" square. 007918 $30.00 (Members $27.00).

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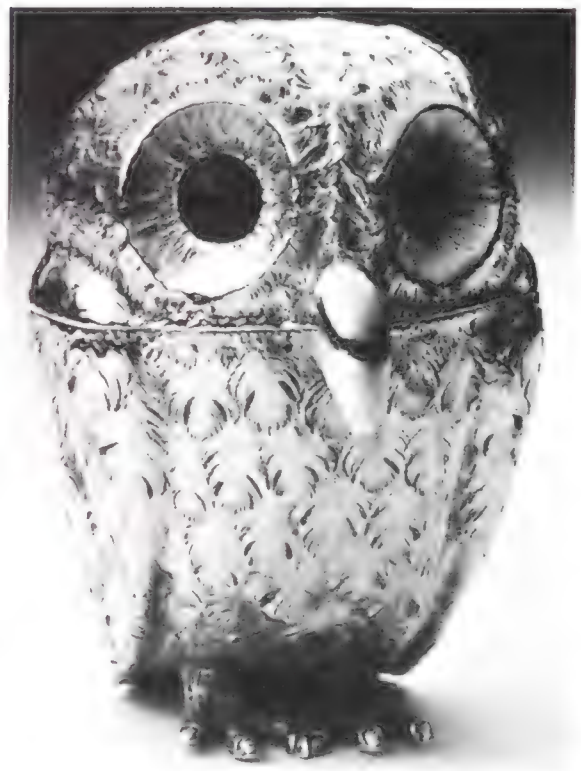
The Child in America—Observes the changing roles of children over the past 200 years (week of February 3).

Art of Africa—A visit to the newest member of Smithsonian, the Museum of African Art (week of February 10).

Battle of Midway—Captain George Gay looks back at his own harrowing experience during this point of World War II; *Fantastic Illustration*—A look at the charming and sometimes bizarre illustrations of late Victorian era (week of February 17).

1979 Festival of American Folklife—Highlights feature sounds of the Caribbean, medicine shows and energy-saving ways of American Indians (week of February 24).



At Cooper-Hewitt is button-eyed mustard pot by Charles and George Fox, 1855.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some February exhibits:

San Francisco (February 1-April 1)—*Louis M. Eilshemius: Selections from Hirshhorn* (SMITHSONIAN, November 1978), M. H. De Young Museum.

Storrs, Connecticut (February 2-March 2)—*The Graphic Works of Odilon Redon,* William Benton Museum of Art.

Athens, Georgia (February 9-March 23)—*The First 4,000 Years: The Ratner Collection of Judaean Antiquities,* University of Georgia, Georgia Museum of Art.

Louisville, Kentucky (February 16-March 16)—*Edison and the Electrical Age,* Museum of Natural History & Science.

Morris, Minnesota (February 2-March 2)—*Dorothea Lange: Her Collection,* University of Minnesota.

Billings, Montana (February 23-March 23)—*Quintessential Quilts,* Western Heritage Center.

Trenton, New Jersey (February 2-March 2)—*Buildings Reborn: New Uses, Old Places,* New Jersey State Museum Cultural Center.

Durham, North Carolina (February 16-March 16)—*World of Haitian Painting,* North Carolina Central University.

Mansfield, Ohio (February 23-March 23)—*Erté* (SMITHSONIAN, December 1979), Mansfield Art Center.

Columbia, South Carolina (February 16-March 16)—*Pochoir,* University of South Carolina, McKissick Museum.

Chattanooga (February 2-March 9)—*Charles Burchfield: Charles Rand Penney Collection,* Hunter Museum of Art.

Seattle (February 2-March 2)—*Polish Posters,* Charles and Emma Frye Art Museum.

Madison, Wisconsin (February 16-March 16)—*Benny Motzfeldt: Norwegian Pathfinder in Glass,* Elvehjem Museum of Art.

Huntsville, Alabama (February 23-March 23)—*Images of Earth from Space,* Alabama Space and Rocket Center.

Mesa, Arizona (February 2-March 2)—*Blacks in the Westward Movement,* Mesa Community College Library.

Augusta, Georgia (February 9-March 9)—*Folk Art and Crafts: The Deep South,* Augusta Richmond County Museum.

Meadville, Pennsylvania (February 16-March 16)—*Arts as Language,* Allegheny College.

Carbondale, Illinois (February 2-March 2)—*African Artists in America,* Southern Illinois University at Carbondale.

Quincy, Illinois (February 23-March 23)—*Graficas: Contemporary Latin American Prints,* Quincy Art Club.

Evansville, Indiana (February 16-March 16)—*Edison and the Electrical Age,* Evansville Museum of Arts & Sciences.

Mount Vernon, Iowa (February 23-March 23)—*America's Architectural Heritage,* Cornell College.

Worcester, Massachusetts (February 9-March 9)—*A Cartoon History of U.S. Foreign Policy, 1776-1976,* Worcester Polytechnic Institute.

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Smithsonian Sampler Weekend—March 7-9 or March 21-23: Join curators and staff for behind-the-scenes tours of specially selected museums.

New York: March 10-13 or March 13-16: Special lectures, visits to the Morgan Library, the Frick and Metropolitan Art museums; also includes theater and opera.

Tetons Winter Ecology—March 14-22: In cooperation with the Grand Teton Environmental Education Center, study the delicate balance of nature in winter.

New Orleans and Acadia—March 24-31: Learn about the history, architecture and cuisine of this cultural area.

Okefenokee Swamp—April 5-12: A wilderness adventure through the heart of this beautiful, primeval refuge with its moss-draped cypress trees and array of springtime flowers.

Big Bend—April 26-May 4: Hike the spectacular canyon trails in this southwest Texas wilderness park.

Asheville, North Carolina—May 2-5: Repeat of a popular program including Biltmore and other historic homes.

Navajo and Hopi Cultures—May 4-13: Visit the land of mesas and canyons, tracing the rich tribal history of these Arizona Indians.

History of the Federal City—May 14-18: Discover the fascinating people and events involved in the origins and development of our nation's capital, including private house tours and behind-the-scenes visit to the Capitol.

Grand Tetons—June 1-11: An active outdoor program of hikes and field trips to explore the beautiful back country of Grand Teton National Park.

Bryce/Zion—June 3-11: Study the geology and natural history of Utah's spectacular national parks.

Collegiate Peaks of Colorado—July 26-August 3: Base camp nestled in alpine basin near Continental Divide provides ideal setting for environmental education.

Alaska—July 31-August 8: The serenity and natural wonders of Mt. McKinley National Park at Camp Denali, a wilderness retreat.

Washington "Anytime" Weekend: Choose any weekend to visit your choice of Smithsonian museums, spend two nights at Loew's L'Enfant Plaza Hotel or Hyatt Regency Washington, each close to the Mall, and see other sights in the city by Tourmobile. Reservations and payments at least ten days prior to arrival.

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Egypt-Israel Cruise—March 17-April 7: Join noted archaeologists and anthropologists for a three-day program in Cairo and a 17-day cruise aboard the *Argonaut*. Visit Luxor, Karnak and the Valley of Kings. Travel to Petra and the Wadi Rumm on the Arabian Peninsula. Transit the Suez Canal for Palm Sunday weekend in Jerusalem and Haifa. Continue to the Greek islands of Santorini and Crete, arriving in Athens for Easter.

Ecuador and the Galápagos Islands—April 18-May 1: Visit Quito, then travel by train to Guayaquil to board the *Buccaneer* for a seven-day voyage through the famous Galápagos Islands. Participate in shipboard study seminars; meet with scientists.

Springtime in Greece*—May 4-20: A program in Athens and a cruise to Hydra and Aegina, followed by visits to renowned sites of ancient civilizations when the countryside is a paradise of wild flowers.

Russia*—May 18-June 1: Enjoy springtime in Leningrad, Tallinn and Moscow with a two-day excursion to Vladimir and Suzdal; see palaces, the Kremlin, the Hermitage among other museums; life-seeing visits to schools, factories and clinics; visit theater and unique Russian circus.

London*—May 25-June 8: A full program in London with special lectures, walking tours, theater and excursions. A five-day travel seminar into the English countryside offers a selection of areas to be visited.

Isles of Britain—May 30-June 15: From London and Southampton, circumnavigate Great Britain aboard the *Argonaut*, with visits to Dublin, Conway in North Wales, Edinburgh and Dover. The cruise also includes fascinating lesser-known destinations in the Isles of Scilly, the Inner and Outer Hebrides, the Shetlands and the Orkney Islands.

The Wild Highlands of Scotland—May 29-June 14: In cooperation with the Aigas Field Centre, based in a Victorian castle, explore the magical scenery of the central Highland glens.

Montreal/Quebec—June 14-19: Enjoy the old-world charm of these Canadian cities while learning about their cultural history on walking tours and museum visits.

Iceland: Land of Fire and Ice—August 3-17: Travel a dramatic rugged terrain of glaciers, hot springs, geysers, fjords and waterfalls. Visit outpost fishing and farming communities to meet today's pioneers of the far North.

Scandinavian Passage: Fjords and Capitals—August 8-23: From Bergen, Norway, cruise the magnificent Nordfjord and Sognefjorden. Continue to Copenhagen and Visby, Sweden, then cruise the Baltic, calling in at Leningrad and Tallinn before returning to Stockholm. Learn about historic and present-day Scandinavia through lectures and activities ashore and on board the *World Discoverer*.

Black Sea Cruise—September 19-October 5: From Piraeus, Greece, the *Argonaut* will cruise this sea of unusual historic and strategic importance. Byzantine treasures of Greece and Turkey, subtropical Yalta, Sochi's scenic splendors and Sukhumi's gardens are highlights.

Antarctica—December 31, 1980-January 20, 1981: Prominent authorities on history and natural sciences make this a rewarding expedition to a powerful continent of pristine beauty. Cruise aboard the *World Discoverer* from Punta Arenas, Chile, to the Falkland Islands, then down to Antarctica.

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Selected Studies Seminars

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American Painting in the 19th Century—March 2-7: Masters such as Copley, Cole, Church, Homer, Ryder and Eakins with tours of the Capitol, National Gallery of Art and National Collection of Fine Arts.

American Antique Furniture—March 16-21: Connoisseurship of masterpieces 1650-1840. Includes color slides of great collections, detection of fakes, care of antiques and tours of the elegant Diplomatic Reception Rooms of the Department of State and of Winterthur Museum.

China: A Cultural History—March 23-28: Prehistory to the enigmas of today, with emphasis on the intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the Freer Gallery of Art.

Genealogical Research—March 23-28 and June 8-13: Leading authorities teach participants how to conduct research in the National Archives, Library of Congress and DAR Library.

French Impressionist Painting—April 13-18: Includes tours of the many masterpieces by Monet, Degas, Renoir and other artists in the collections of the National Gallery of Art and other museums.

A Grand Tour of the Solar System—April 20-25: Leading scientists in planetary exploration at NASA share their new knowledge using slides and films made during the most recent missions. Includes activities at Goddard Space Flight Center and the U.S. Naval Observatory.

Historic Horticulture—May 4-9: Celebrate spring in major 18th-20th-century gardens including colonial Mount Vernon, the National Arboretum and the du Pont estates of Longwood and Winterthur.

The Arts of Japan—May 18-23: Prehistory to the present, with emphasis on the great philosophies, religions and impact of other cultures. Includes films and tours of the Freer Gallery of Art.

Astronomy of the Ancients—June 15-20.

381-5635 (tours) or (202) 381-6434 (seminars).

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By Patrick Ryan

Snuff? Snus? *At least, an alternative to smoke*

Any freak gale-force winds lately experienced by inhabitants of the west of England might well be traced back to the "First World Snuff-taking Championship," which was held in Wellington, Somerset. Sadly, for resident patriots of the snuffbox, German competitors swept the board. The men's title was won by Herr Xaver Wenger, who snuffed his watery-eyed way through 5.8 grams in three minutes, while the women's world crown was awarded to Fraulein Christina Strobel, who nuzzled up 4.53 grams. Perhaps some innate stolidity in the Teutonic character enabled the all-conquering couple to withstand the pitiless tickle of gesundheit powder with stiffer lips and stauncher nostrils than their competitors from more effervescent nations.

European consumption of tobacco—by incendiary, nasal or molar means—cannot be traced to any precise inaugural date, but major import of the soothing leaf followed upon the Spanish conquests in North and South America. When Cortés arrived at the court of Montezuma in 1519, he found that the Aztecs of Mexico were principally partial to smoking. But when Pizarro encountered Atahualpa in 1532, he discovered that the Incas of Peru preferred to pound their dried tobacco leaves and snuff the resultant powder up their noses.

In 1560 France's ambassador to Portugal, Jean Nicot, sent tobacco plants and seeds to France. Later he persuaded Catherine de Médicis to try snuff. The Queen of France thus became Europe's first recorded royal snuff taker. His name is immortalized, of course, in the fragrant word "nicotine."

By the 18th century, snuff taking took precedence over smoking as a social grace. The courts of Europe became devoted to the snuffbox. Frederick the Great, Queen Anne of England and Catherine the Great all approved the habit. George III's royal wife indulged so incessantly that she was popularly known as Snuffy Charlotte. The leading snuff purveyors of the time, whose shop in Haymarket, London, is still open today, provided King George IV with his own special blends, King's Morning Mixture, King's Evening Mixture, King's Plain and King's Carotte. His Majesty could tell the time of day, perhaps, by the flavor of his snuff.

The aristocratic popularity of snuff contributed a minor art form to our heritage. The snuffbox became a status symbol, the richness of its materials and the opulence of its decoration reflecting the wealth and rank of its owner. Napoléon Bonaparte was said to possess a full annual set of 365. Which might explain why, in so many of his portraits, he has one hand plunged across his cummerbund and concealed inside his jacket. It could be that he was just checking up that he'd remembered to pocket the right snuffbox of the day.

But the reign of the snuffbox went into decline around the middle of the 19th century, when smoking came back into style. New mass markets for smokeless tobaccos opened up in the developing areas of the United States.

Chewing tobacco was popular, and in some subcultures still is—as is obvious from the bulging cheeks of baseball players. In Scandinavian areas of the northern states, snuff or *snus* (Swedish spelling with the "s" hissed), dubbed "Swedish dynamite" by lumberjacks, was taken into the mouth and agitated gently from time to time. Legend has it that tidy housewives of the early 20th century objected to smoking because it soiled their snowy curtains. Chewing cut plug was regarded as messy because of the frequent need to spit (despite the elegant warning of the old rhyme, "When you chew tobacco don't spit on the floor, expectorate in the cuspidor").

Snus was the answer. Placed under the lower lip or inside the cheek, it satisfied the craving for nicotine. The necessity to spit occurred only a few times a day. In the Ozark and Appalachian areas, snuff dipping became prevalent. One moistens a twig, gathers snuff from the box and sticks the combination into the mouth.

According to reports, chewing tobacco is presently growing in popularity in the United States. Could this be the herald of a future renaissance in snuff taking? Surely that expectorate inelegance unavoidable in mastication will be found by many to be something of a social handicap. Then where else can those folks who have forsworn small portable bonfires turn for their nicotine ration but to the courtly snuffbox? Fingers that now but crudely flick the lighter will engage once again in the stylish hand ballet of the snuffbox. The flourish of production, the dainty tap upon the lid, the gallant advance of the open box, the delicate pinch between finger and thumb, the graceful offering to either nostril, and the final mannerly flourish of the frilly handkerchief. Except for the occasional stifled sneeze, no inconvenience whatever is caused to the surrounding company. The needful dose of "tranquilizer" is absorbed without, as Dr. Johnson observed when he gave up smoking for snuff inhalation, any "blowing of smoke out of our mouths into other people's mouth, eyes and noses. . . ."

Why St. Regis submerged a bag of potato chips in 25 ft. of sea water for four hours.

It happened 200 yards off the coast of Bimini. In a two-man submarine, we took an oversized bag of potato chips 25 feet below the Atlantic Ocean. And then left the bag there for four hours.

Why did we sink our bag into a world usually populated only by sand sharks, barracuda, brain coral and every imaginable color of tropical fish? We did it to prove something about St. Regis' technological leadership in making plastic film.

Of course, a bag of potato chips almost never has to withstand the ton of pressure and onslaught of moisture this one was subjected to. Our bag is designed to keep out moisture vapor and gases, like oxygen, as well as keep oils in. It has to do all this to ensure freshness and preserve shelf life.

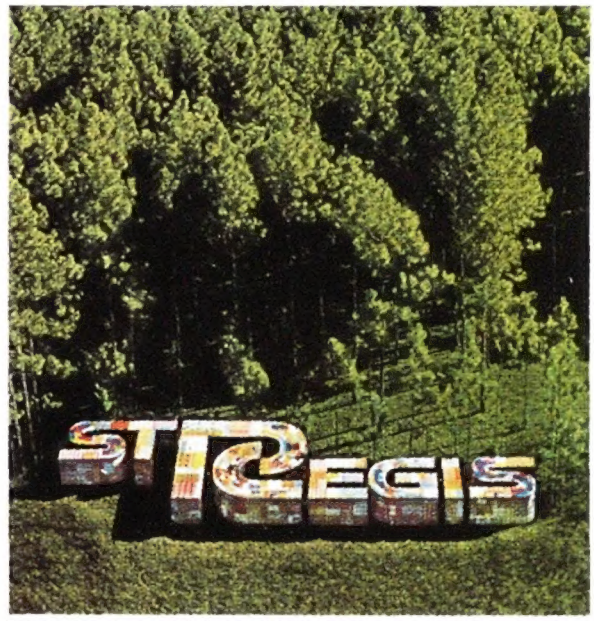
This St. Regis potato chip bag does this so well because it's made of our Co-Ex film—three layers extruded simultaneously. Each layer imparts a different property to the film, not only for keeping things out, but to help keep freshness and flavor in.

What happened when the four hours were up? We opened the bag and ate some chips, right down to the last crisp, flavorful crumb.

Co-Ex film is just one example of why St. Regis is a leader in packaging technology.

All this reflects the marketing stance of St. Regis toward all our packaging, paper, lumber and construction products. To use the full weight of our technology in serving our markets and in renewing the forest resource our products come from.

St. Regis—serving Man and Nature.



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